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# EUROPE

A REGIONAL GEOGRAPHY

BY

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## PREFACE

IT was the intention of the late Professor Herbertson to write a regional geography of Europe, sufficiently advanced for use in the upper forms of schools and in Training Colleges, &c. He discussed the scheme of the book thoroughly with Miss N. E. MacMunn, who was to assist him in writing it, and who has a letter of his explaining his ideas for the working out of the scheme. He left, in addition to the general outline of the book, an introductory chapter and full notes on the Russian section. By the courtesy of Miss Margaret Herbertson these notes were handed over to the authors of the present book, and they have endeavoured, as far as possible, to work out Professor Herbertson's scheme. His introduction has been used practically as it stood, and the main sectional headings and the order of treatment are his.

The first object of the writers has been to provide a geography of Europe which shall be regional in a true and logical sense of the word; that is, one in which the delimitation of geographical units shall be based on the interaction between man and his environment.

An endeavour has been made to give a sufficiently full account of the regions to be readable, and thus to supply real material for essays and exercises. Geography text-books are usually so compressed and tabulated as to leave no scope for individual selection and rearrangement; hence the familiar cry that they are 'so difficult to learn out of'. Such books are hard to learn from because the only way to attack them is to memorize them. Hence a fuller treatment, though it looks more formidable in bulk, provides something in reality easier to assimilate.



The teacher will appreciate the following points, which have been kept in view by the writers throughout :

(1) The book can be followed easily with the help of the ordinary school atlas. Wherever names have been used which are not found in such atlases, sketch-maps have been supplied.

(2) Abundant *monthly* climatic figures have been given, so that climate may be studied as it really is. In this way material is supplied for climatic graphs, the making of which is one of the safest and surest methods of gaining a clear conception of climatic conditions.

(3) Towns and town sites have been treated logically and fully. Throughout the book no town is mentioned without a clear indication of the geographical reasons for its position and importance.

(4) Natural routes have been dealt with in detail and with abundant sketch-maps.

It has been felt that in many schools and Training Colleges a somewhat detailed treatment of Palestine would be useful, and this has accordingly been supplied. In this connexion Dr. George Adam Smith's incomparable treatise, *The Historical Geography of the Holy Land*, has been used and referred to.

The section on the Balkan Peninsula owes much to Dr. Marion Newbiggin's *Geographical Aspects of Balkan Problems*, a regional essay of a type all too rare in the English language.

The authors wish to acknowledge gratefully the advice and assistance of Mr. H. O. Beckit, Director of the Oxford School of Geography, and of Mr. J. Cossar, Lecturer at the School.

N. E. MACM.

G. C.

SCHOOL OF GEOGRAPHY, OXFORD,  
1922.

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# I

## THE POSITION, BOUNDARIES, AND DIMENSIONS OF EUROPE AND THE MEDITER- RANEAN LANDS

*Central Position of Europe in the World.* Europe lies in the centre of the land hemisphere (Fig. 1), in an advantageous position for reaching all the other continents by sea. Long gulfs of the Atlantic Ocean cut it into peninsulas and give it a great extent of coast-line.

Although Europe would seem to have access by sea to all the other continents, there are three barriers to direct sea routes with certain parts of the world :

- (1) The ice of the Arctic Ocean, preventing communication by the northern seas.
- (2) The Isthmus of Suez, separating the Mediterranean Sea from the Red Sea and the Indian Ocean.
- (3) The Isthmus of Panama, interfering with a short direct route between the Atlantic and Pacific Oceans.

The isthmus barriers have been overcome by man's efforts, but the ice barrier is too formidable, though many attempts have been made to get through it both toward the north-west and toward the north-east. While these efforts have not led to the discovery of any practicable route, they have resulted in important discoveries.



Fig. 1. The Land Hemisphere.

*The North-West Passage.* The search for a north-west passage round the north of North America led to the discovery of Hudson Bay, and other important features of the coastline. Where such famous explorers as Parry and Franklin had failed, Amundsen, a Norwegian, succeeded in finding a passage in 1903-6. It can never, however, be of practical importance commercially.

*The North-East Passage.* Attempts to find a north-east passage round the north of Asia also failed, for the margin of the ocean was never long enough ice-free for ships to pass, but the search for a practicable route stimulated the White Sea trade between Russia and Britain. Nordenskiöld, a Swede, sailing in the *Vega* first found a passage in 1878-9, but it too is of no more commercial importance than the north-west passage.

The land barriers have been more successfully overcome by cutting canals.

*The Suez Canal.* The Isthmus of Suez, 72 miles across, is a low-lying desert, containing some salt lakes. Across this a canal 100 miles long was cut by French engineers, and opened in 1869. This avoided the long voyage round the Cape of Good Hope, and shortened the distance from the English Channel to Bombay from 10,636 miles to 6,109 miles, and to Calcutta from 11,460 miles to 7,751 miles.

*The Panama Canal.* The Isthmus of Panama is 31 miles wide at the narrowest, and 312 feet high. The climate is wet and unhealthy. Attempts by French engineers to cut a canal failed, but the United States Government took over the task and the canal was opened in August 1914. It is about 50 miles long and saves over 6,000 miles between the English Channel and San Francisco.

These two canals make the central position of Europe infinitely more valuable, and link it closely with the countries of the Indian and Pacific Oceans.

*The Barrier between the Mediterranean Lands and Africa.* The Mediterranean Sea has always been a link between

Europe and Africa rather than a barrier. The Strait of Gibraltar is only 9 miles wide. The strait between Sicily and Tunis is only 95 miles, while the coast-line is continuous at the eastern end. The Mediterranean lands surrounding the sea form part of one natural region, similar in many respects, and with easy communication by land and sea. They are cut off from Africa proper by the formidable barrier of the desert of Sahara, which extends from the Atlantic Ocean to the Red Sea, and is 1,000 miles across from north to south. The Nile crosses it in the east, but elsewhere water is very scarce. Camel caravans cross by routes from well to well, but not without danger and frequent loss of life. In the first years of this century the French planned a railway across the Sahara from the Algerian coast to the coast of French Guinea, but only a small part of it has so far been made.<sup>1</sup> The land routes southwards from the Mediterranean, except by the Nile Valley, are therefore of little importance.

*Barriers between Europe and Asia.* The North African desert is continued into the heart of Asia and makes communication difficult from east to west. Routes from the Mediterranean to the Red Sea and the Persian Gulf, with the fertile adjacent district of Mesopotamia, have all to cross the desert. Generally speaking the caravan routes eastward across Asia follow the base of the mountains, where the rivers from the snowy heights supply water and lead to the growth of settlements.

North of the desert belt communication between east and west is easy. The rolling grassy plains known as steppes stretch from Central Europe across Asia, and a horseman can ride for thousands of miles without difficulty, whilst fodder is abundant. The steppe belt has been the line along which great migrations of peoples between the two continents have taken place.

North of the steppes is the forest belt, with rivers as the

<sup>1</sup> i. e. from Oran to the oasis of Béchar, and from Konakry on the Guinea coast, for a distance of 418 miles to the banks of the Upper Niger.



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only practicable routes. The main streams run north and south, but important tributaries run east and west, and often approach each other closely. North of the forest is the cold barren tundra, where movement is comparatively easy, but food scarce, and population is very scanty.

*Sparsely-peopled Lands are often Boundaries.* Europe and the Mediterranean lands are thus cut off from the most fertile parts of Asia and Africa by infertile and thinly peopled lands. The only densely-peopled region, the Nile valley, owes its fertility to irrigation. Mesopotamia also was once irrigated and densely peopled, but it is so no longer. In recent years new routes have been made by building railways across the desert. The most important are those from the Caspian to Central Asia, the almost completed railway by Bagdad to the Persian Gulf, and that by the Nile Valley to the Sudan.

*Natural Routes of Europe.* The breadth of Europe from east to west is so great compared with its length from north to south, that much importance has always attached to ways of travelling across the continent toward Russia and Asia and toward the Near East. Three natural routes stand out: (1) across the northern plain, (2) across the Central European Highlands, (3) south of the Central European Highlands.

(1) The northern route, starting from Paris, skirts the northern edge of the Ardennes and the Lower Rhine Highlands, passing the towns of Namur, Liège, Cologne, and Hanover to Berlin. Here the plain widens out, and the route branches north-east to Danzig and Leningrad, and east to Warsaw and Moscow.

(2) The route across the Central Highlands runs from Paris to Nancy, then through the Rhine Highlands by the Saverne Gap (p. 230) to Strasbourg. Thence it bends northward to skirt the Black Forest Mountains by Karlsruhe and Stuttgart to Munich and Vienna. From Vienna a branch goes northward through the gap made by the Upper Oder between the Sudetes Mountains and the Carpathians (i.e. the Moravian Gate) to Leningrad and Moscow; and another

branch follows the Danube to Belgrad and then through the Balkans to Constantinople and the East. (See p. 78).

(3) The Southern route goes from Paris up the Yonne valley, through a long tunnel in the Côte d'Or (p. 294) to Dijon, and down the Saône-Rhône *couloir* to Lyon. From Lyon one branch goes down the Rhône to Marseille, and another across the Alps by the Mont Cenis tunnel to Turin and thence across the Plain of Lombardy past Bologna to Brindisi, or through the Bochetta Pass to Genoa and Rome.

These three natural routes are of world importance, for the northern one leads eventually across Asia to the Pacific, the central one to Constantinople and Mesopotamia, and the southern one is the so-called 'overland' route to India.

*The Boundaries of Europe.* Europe is bounded by seas except on the east, where no well-marked natural frontier can be drawn. That commonly taken as the boundary between Europe and Asia follows the water-parting of the Ural Mountains, the Ural river, the water-parting of the Caucasus, the Black Sea, and the Sea of Marmora. The line is continued through the Aegean Sea, south of Crete, and Malta, and through the Strait of Gibraltar. The islands of Iceland and Novaya Zemlya are usually included, but not Spitsbergen or Franz Josef Land. Excluding the last two the area of Europe exceeds 3,750,000 square miles, or more than thirty times the area of the British Isles.

If we include the Mediterranean lands outside Europe,—Asia Minor, Syria, fertile Egypt, Tripoli, and the Barbary or Atlas countries of Morocco and Algeria, as is done in this book,—the area of the European region is close upon 5,000,000 square miles.

This area lies approximately between latitude  $30^{\circ}$  north and latitude  $70^{\circ}$  north, and, excluding Iceland, between longitude  $10^{\circ}$  west and longitude  $60^{\circ}$  east. The distance from the coast of Morocco to Suez is about 2,600 miles; from Portugal to the Caspian Sea 3,000 miles; from the west of Ireland to the Urals 2,400 miles; from Iceland to the south of

Morocco 2,500 miles; and from the North Cape to Cairo nearly 3,000 miles.

The mass or continental core of Europe proper narrows from east to west. It is nearly 1,500 miles from the Caspian to the Arctic ocean along the meridian, over 600 miles from the Adriatic to the North Sea, and 230 miles from the Mediterranean to the Bay of Biscay.

*Peninsulas, Islands, and Seas.* From this triangular core the peninsulas of Scandinavia and Denmark project in the north, and the Iberian, Italian, and Balkan peninsulas in the south. The White, Baltic, and North Seas are the chief northern seas, and the western Mediterranean between Iberia and Africa, the eastern Mediterranean with the gulfs of the Adriatic, the Aegean and the Black Seas, are the southern seas. The Caspian Sea is a basin of inland drainage, not connected with any ocean.

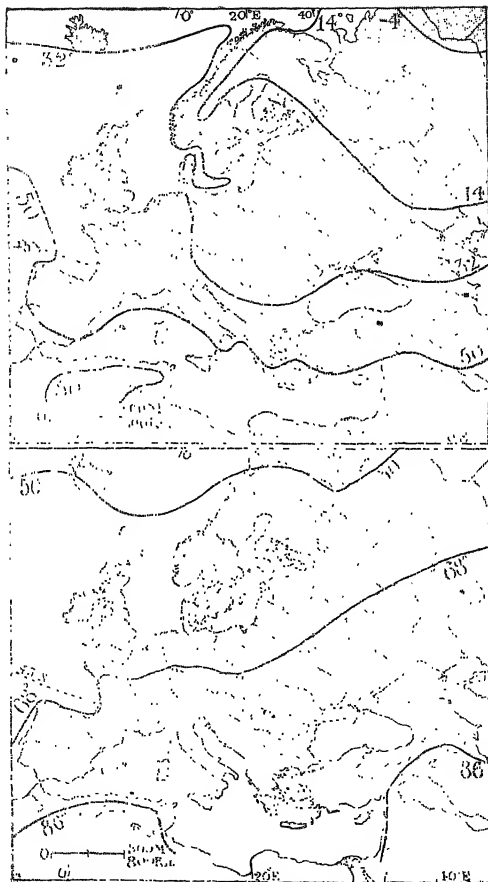
*Physical Divisions.* A contour map of Europe shows :

- (1) that there is a belt of high land all round the western Mediterranean, and that both basins are very deep.
- (2) that eastern Europe is low.
- (3) that a belt of shallow seas bordered by lowlands stretches from the Bay of Biscay to the White Sea, and that the land rises to the north-west of this.

This gives us three divisions according to height: (1) the eastern lowlands, (2) the southern mountains and bordering deep seas, and (3) the lowlands and shallow seas of the north-west, with their bordering highlands.

*Climate.* These three divisions are also, as it chances, climatic divisions in a broad sense, for eastern Europe has a continental climate, western Europe an oceanic climate, and southern Europe a Mediterranean climate.

The continental climate of eastern Europe is characterized by (a) extremes of temperature, (b) a rather scanty rainfall occurring mainly in summer. The summer heat and winter cold are due in the main to two causes, first the fact that land masses heat and cool very quickly, and secondly that inland



Figs. 1a, 2b. January and July isotherms for the ocean.

countries do not benefit by the moderating influence of sea-winds. The scantiness of the rainfall is due to the fact that the westerly winds which prevail in Europe have lost their moisture before they reach the eastern part, and the summer maximum of rainfall is caused by the intense heat. The heat creates an area of low barometric pressure, and toward this area winds are sucked in and bring with them moisture. The heat causes the moisture laden air to rise, expand, and cool, and the cooling results in condensation of water vapour.

The oceanic climate of western Europe needs little explanation. The effect of nearness to the sea, much enhanced by the deep inlets already mentioned, is to produce (a) abundant rainfall all the year round, (b) a very moderate range of temperature, with mild winters and cool summers.

The Mediterranean climate is characterized by (a) mild winters and very hot summers, and (b) an abundant winter rain with drought in summer. This type of climate is dealt with fully in discussing the regions where it prevails. (p. 60).

*Isotherms.* The isotherms of Europe (Figs. 2 a and 2 b) should be studied in connexion with the above remarks on climate. The January isotherm of  $32^{\circ}$  F. makes a very fair boundary between the continental and the maritime regions. On the cold side of this line there is at least one month with plenty of ice and snow. It should also be noticed, by comparing Figs. 2 a and 3, that this line forms a rough and ready boundary between the area of summer rain and that of rain all the year round.

The July isotherm of  $68^{\circ}$  should be compared with Fig. 4. It will be noticed that in western Europe this line corresponds roughly with the northern limit of the vine and maize.<sup>1</sup>

*Distribution of Vegetation.* From the kind of vegetation covering a region we can tell something of the quality of that region, so that it is necessary to pay attention to the distribu-

<sup>1</sup> i. e. the northern limit of where these plants flourish sufficiently to be of economic importance. Vineyards and maize fields on a small scale exist much farther north.

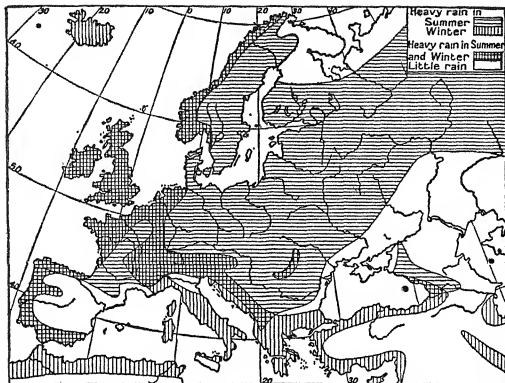


Fig. 3. Regions of Winter and Summer Rains.

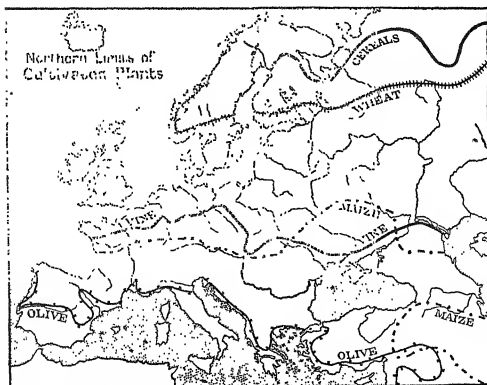


Fig. 4. Northern limits of some important cultivated plants.



tion of vegetation, as well as to that of relief and climate. Much of Europe is forested. The northern forests are of evergreen coniferous trees; those of Central Europe are deciduous in the lowlands and coniferous on the highlands; those of the Mediterranean consist of evergreen oaks and species of pine not found in the northern forests. Their distribution is shown in Fig. 5.

Evergreen trees are hardier than deciduous trees. The coniferous trees of the northern forests can endure severe winters, while the evergreen trees of the Mediterranean forests are fitted to bear dry summers.

Fig. 5 shows that south-eastern Europe is a region of grass lands or steppes, that the higher mountains are barren, and that the lands bordering the Arctic Ocean have a very scanty vegetation. This region, where the ground is frozen for many months, and where the growing time of plants is very short, is called the tundra.

A traveller from the Black Sea to the White Sea would cross the treeless steppe in the south, deciduous forests in the centre, coniferous forests in the north, and a strip of tundra along the shores of the White Sea. A traveller from the Strait of Gibraltar to the White Sea would cross the evergreen Mediterranean forests in the south, the deciduous forests of Central Europe, the northern coniferous forests, and the tundra.

On the south the grass lands pass into poor steppe or scrub, and even into actual desert round the Caspian Sea and in Syria and Africa.

*Natural Regions of Europe.* These differences of elevation, climate, and vegetation divide Europe into natural regions, each with its characteristic occupations and mode of life.

*Historical Divisions.*<sup>1</sup> The three-fold division of Europe shown in the general configuration of the continent and in the broad climatic differences (see p. 6) is marked also in the historical conditions.

Eastern Europe has had little historical connexion till

<sup>1</sup> See Appendix by O. J. R. Howarth, p. 324.

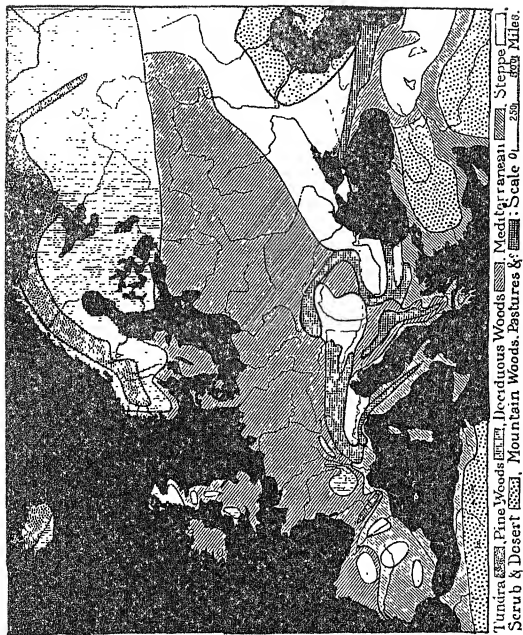


Fig. 5. The Natural Vegetation of Europe.

recently with the rest of the continent. Being cut off from the west and south by swamps and mountains but open on the east, in which direction the lowland continues unbroken to the Pacific Ocean, Russia has turned her attention to Asia rather than to Europe. She is also, in the main, racially distinct from the other big European divisions. The population is largely, though not entirely, composed of people of the short dark round-headed type often known as Alpine.

In the southern division the people belong to another dark race with long heads, the Mediterranean race. In the Mediterranean peninsulas, protected by their mountain barriers and offering favourable conditions for human life, a marked civilization developed in pre-classical and classical times, very different from, and far in advance of, that of the east or north. In later times the mountain ranges put a limit to the kingdoms of the south and divided them from those of the north and west.

North-west Europe is the home of the third great race of the continent, a people with long heads, fair colouring, and tall stature, who occupied all the northern lowlands and their border highlands.

## II

### • THE EASTERN LOWLANDS OF EUROPE RUSSIA, FINLAND, POLAND, RUMANIA

*General Character.* It is simplest to begin the study of Europe with the eastern lowlands where the influence of mountains and seas need hardly be considered. They form a vast level area compact in shape and greater than all the rest of Europe. The uniformity of shape and elevation is a complete contrast to the irregular outlines and varied relief of the rest of the continent.

Some idea of the vast extent of eastern Europe may be obtained by measuring the distance from the White Sea to the

Sea of Azov (over 1,150 miles) and from the head of the gulf of Finland to the Ural Mountains (over 1,100 miles). In this great area of 2,000,000 square miles only a few small districts have any land over 1,000 feet high. That is to say, in an area forty times the size of England there is no land higher than the Cotswold Hills or the Yorkshire Moors.

This absence of any great variety in elevation has many important results. It causes the climate and products to be the same over large areas; it makes the rivers sluggish and therefore navigable almost to their sources; it makes it easy to cut canals from one river to another and to build railways in any direction. It is told that the Emperor who was consulted about the route for a railway from Moscow to Leningrad, took a ruler and drew a straight line on the map. This line was almost exactly followed. That could only be done in a country as uniform as Russia.

Rivers are the most important physical features on such a flat plain, and considerable attention should be paid to them. There are a good many remarkable features about the river system of Russia. The rivers flowing to the Baltic and Arctic seas are not divided by any marked physical line from those flowing to the Black Sea and the Caspian. They all rise close to each other in flattish country, and in rainy seasons much of this land is flooded so that it is impossible to draw lines between one river system and another. Many of the Russian rivers rise on the flat Valdai heights and flow out in all directions east, south, west, and north. The most important of these are the Volga—the longest river in Europe—the Dnieper, and the Dvina.

The southward-flowing rivers all make remarkable bends and sudden changes of direction. The Volga, Don, and Dnieper change their courses abruptly at right angles in the southern plain. This causes them to flow over and water a larger area of the plain than if they had a straighter course to the sea, but it also makes them less useful as routes to the coast.

It should now be noticed that the plain, though generally level, is not entirely flat, for there are small heights that distinguish different parts of it. Four areas of higher land are found, in the west, centre, east, and north, each divided from the other by wide basins drained by the principal rivers. The higher land of the west is again divided into three parts from north to south. There are the Baltic Heights to the north separated from the West Russian Heights by lower land, this lower land making an easy route for a railway between the important towns of Warsaw and Leningrad. In the south rises the Carpathian Foreland (2,000 feet) separated from the West Russian heights by the wide marshes of the Pripet river. The valley of the Dnieper separates these hilly areas of the west from the belt of Central Russian Heights (1,000–1,200 feet), and the Don basin divides the central from the eastern or Volga Heights (1,500 feet) which in their turn sink abruptly to the river Volga. This eastern section of the lowland is terminated by the Ural mountains. The last belt of heights is in the north, a region of low hills known as the North Russian Heights rising between the upper Volga and the northern Dvina.

The Urals are not impressive mountains. They slope very gradually on the European side, but rather more steeply to Asia on the east. They are widest in the south, where the higher points are about 6,000 feet. There is a considerable stretch in the centre which does not rise above 1,350 feet, where the slope is almost imperceptible and a branch of the Siberian railway has been carried across the Urals in this part.

*Rocks, Soils, and Vegetation.* The explanation of many surface features is found when the rocks that compose them are examined. Rocks are divided into Archaean (old rocks without any fossils); older and younger Primary (or Palaeozoic) rocks; Secondary (or Mesozoic) rocks; Tertiary (or Kainozoic) rocks; Quarternary (or recent rocks), and igneous rocks which may be of any age.

In eastern Europe the oldest rocks are found in the border

mountains and younger layers are crossed in passing towards the centre. It looks as if in this part of the globe the surface had sagged very gradually so that flat layers of sedimentary rocks were laid down one after another. As most sagging took place in the centre the largest area of youngest deposits are found there. These rocks lie almost horizontally, and if the land were higher the valleys would have been deeper and a well-marked tabular landscape would have been formed ; but the land has been worn down almost flat, and so there are few marked tables and escarpments. The west bank of the Volga is one of the exceptions.

Rocks decompose at the surface when they are exposed to the air and rain, and form soils. As a rule the quality of the soil depends on the nature of the rock underneath. Soils, however, may be transported from one place to another, (1) by running water, which deposits them elsewhere as alluvium, (2) by ice, which mixes up different soils and deposits them as boulder clay (till) or morainic material, and (3) by wind, which carries the lighter or finer particles away and forms loess. In the cases (1) and (2) most soluble substances are removed from the soils, but this is not the case with wind-borne material of the loess, which is therefore especially fertile.

In the north of Russia the soil is frozen except for a few weeks in summer. In the north-west, in Finland, the ice has cleared away most of the loose surface, leaving bare rock in the irregularities of which are many shallow lakes. In the Baltic Heights glacier-borne soils have been heaped up, and in the irregularities of the boulder clay are many shallow lakes. Some distance south of this, running roughly north-east from the central Carpathians to the central Urals, is the southern limit of boulder clay, but this belt is older than that round the Baltic. Erosion has acted on it for a longer time, made the irregularities less marked, and filled up the lake basins with alluvium so that they are either marshes, like that of the Pripet (Minsk or Rokitno Swamp) or form flat fertile patches. Beyond this to the south again is the wind-borne loess. In

the northern part of the loess belt, which is richer in plant life, the soil is impregnated with decayed vegetable matter or humus and forms the very rich black soil. In the south-east where very little rain falls the soluble salts have not been

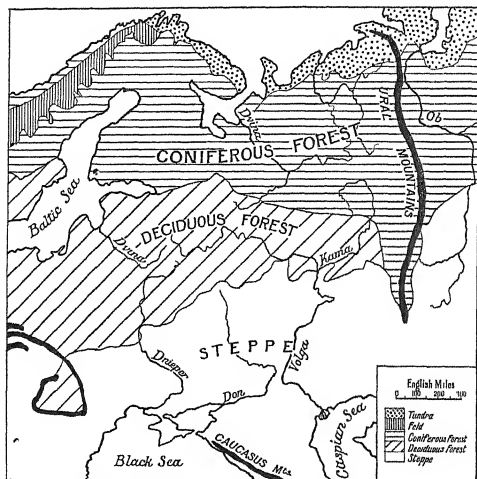


Fig. 6. Vegetation Regions of Eastern Europe.

washed out and there is a very salt soil, unfavourable to plant life except where regularly watered and drained.

In the north and north-west therefore the soil is infertile because it is too cold or too scanty; in the south and south-east it is too poor in nourishment or too salty; between lies the good productive area. The wind-borne soil is lighter, and great trees do not get firmly enough rooted in it, as they can in the stiff glacial clays. Hence we find tundra on the frozen

soil, forest on the glacial soils, and grass or cereals on the loess (see Fig. 6). The forests are not everywhere the same. In the north they are mainly of birches or pine trees; in the

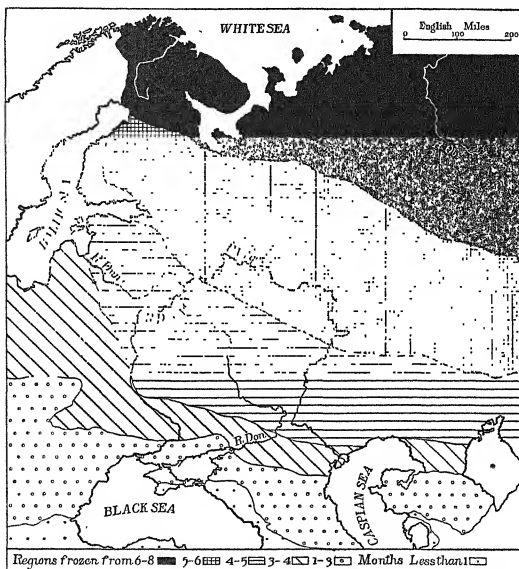


Fig. 7. Map showing the duration of frost in Eastern Europe.

warmer part in the south they are composed of deciduous trees. Here and there the coniferous and the deciduous forests are mixed. These differences in vegetation being due to climate as well as soil, the climatic conditions must now be considered.



*Climate. Temperature.* European Russia lies nearer the pole than the equator, a small part of it being within the Arctic circle. As the surface is so flat the temperature does not vary much over large areas. The isotherms run parallel to the lines of latitude in April or October. In July it is warmer in the east than in the west at the same latitude, but in winter it is very much colder in the east than in the west. The annual range of temperature therefore is much greater in the east. There is a long cold winter, however, in most of Russia. The number of days of frost is shown in Fig. 7. All ponds, swamps, and rivers are frozen for some weeks in the south and some months in the north.

*Rain and Snow.* Eastern Europe receives little rain: the western half has just over 20 inches in the year and the eastern half just under 20 inches. Away in the cold north and the remote south-east the rainfall is less than 10 inches. This rainfall includes snow, which is melted and measured as liquid; if the depth of snow which falls is measured regularly the rainfall it represents is found roughly by considering each foot of snow as equal to one inch of rain.

TEMPERATURE (Fahr. Degrees)

	<i>Elevation.</i> (feet)	<i>Winter.</i>			<i>Spring.</i>		
		D.	J.	F.	M.	A.	M.
Leningrad	19	19.1	17.2	16.5	24.2	35.1	46.9
Moscow	589	17.2	13.1	13.5	23.7	37.2	52.9
Kazan	248	13.0	7.0	8.8	20.0	37.2	54.2
Odessa	214	32.4	26.4	26.6	35.5	47.9	60.4
Archangel	16	9.2	7.7	8.3	17.8	27.8	40.5

	<i>Summer.</i>			<i>Autumn.</i>			<i>Range.</i>
	J.	J.	A.	S.	O.	N.	
Leningrad	59.9	63.7	60.4	51.6	40.2	30.1	47.2
Moscow	63.2	66.2	61.5	50.8	39.6	29.5	53.1
Kazan	63.9	67.8	62.8	50.5	38.3	25.9	60.8
Odessa	69.4	73.3	71.2	62.3	51.6	42.4	46.9
Archangel	54.7	60.8	56.9	46.2	34.9	20.5	53.1

## RAINFALL (Inches)

	<i>Winter.</i>			<i>Spring.</i>			
	D.	J.	F.	M.	A.	M.	
Leningrad	1.2	0.9	0.8	0.9	0.9	1.7	
Moscow	1.5	1.1	0.9	1.2	1.4	1.9	
Kazan	0.7	0.5	0.3	0.6	0.8	1.6	
Odessa	1.3	0.9	0.7	1.1	1.1	1.3	

	<i>Summer.</i>			<i>Autumn.</i>			<i>Annual.</i>
	J.	J <sup>y</sup> .	A.	S.	O.	N.	
Leningrad	1.8	2.6	2.7	2.0	1.7	1.4	18.6
Moscow	2.0	2.7	2.9	2.2	1.4	1.6	20.8
Kazan	2.2	2.4	2.3	1.6	1.5	1.0	15.5
Odessa	2.3	2.0	1.2	1.4	1.1	1.6	16.0

Why should there be less rain when it is colder? Rain is formed by water vapour in the atmosphere being cooled below a temperature at which it can remain vapour, and in consequence it turns to liquid. We may picture to ourselves the water particles kept apart in the form of vapour owing to greater heat, but when the heat is diminished they can no longer be kept so far apart, and gather together to make a drop of mist or rain. As the cold becomes more intense they become more and more congested and form snow-flakes or hail. This being the case, hot air can hold in suspension more water vapour than cold air, and a reduction in the temperature of hot air causes more rainfall than a similar reduction of the temperature of cold air. Hence rain is most abundant near the equator and least at the poles; and greatest at most places in summer and least in winter. Compare the figures giving the rainfall for the months in Russia. Most rain falls in early summer in Southern Russia and in late summer in Central Russia and the Baltic region.

*Winds.* Another thing has to be taken into account in order to understand the distribution of rainfall. The atmosphere is more likely to be saturated near the sea than near the heart of a continent, for the rainy winds of a country are usually from the sea, especially those which come from

a warmer region. The dry winds of a country are usually those which come from the land, especially when they come from colder regions.

In Russia, north of about  $50^{\circ}$ , the prevailing winds are westerly and south-westerly. They come from the Atlantic and sweep over the lowlands and seas of Central Europe carrying moisture and cloud into Russia. In the north, however, Scandinavia acts as a barrier, and that and the very cool summer explain the low rainfall near the Arctic circle. In the south of Russia, on the other hand, the prevailing winds are north-east and east. They come over the lands and carry little moisture, and there is little rain. It falls, however, chiefly in early summer when it is most needed by the growing crops, and so is sufficient for cultivation.

In the extreme south of the Crimca there is a small region which has winter rains. It has a Mediterranean type of climate which will be explained later (see p. 60). The winds can sweep over such a flat country as Russia without any check except from the forests. Sometimes they are very strong. In the Tundra where the snowfall is not heavy they swirl what snow there is into great drifts, leaving much of the surface bare. In the open steppe severe winter wind-storms sweep over the country, and may be compared with the American blizzard.

*Occupations.* The uniformity of relief, soil, and climate makes not only the productions but also the life and ideals of the people very similar over vast areas. But in each of the different vegetation areas, that is in the regions of steppe, forest, and tundra, a different kind of life is lived, adapted to the natural conditions. It must be remembered that in any similar regions in any other part of the world much the same life will of necessity be lived. If, however, the progressive scientific methods of modern civilization have found their way into any region the simpler way of life has been modified and the natural resources made use of in a somewhat different manner. The simpler original manner of life in each region

will be described first, and later (pp. 29-40) the special recent modifications in this part of Europe.

*The Life of the Steppes.* In winter as far as eye can see there is a flat or gently rolling country covered with snow, which cold winds, mainly from the north and north-east, catch up and drive in front of them. These icy cold burans (p. 20) are much dreaded, and the steppe dwellers seek out sheltered valleys to protect their flocks and herds and themselves during the severe winter.

In spring as the air grows warmer the snow disappears, the surface is thawed, and innumerable bright flowers carpet the whole steppe with gay colours. These do not last long, for the grass whose roots receive the water melting in the soil as it gets warmer grows very rapidly and soon is several feet high. With early summer come occasional rains and the grass itself flowers, and then turns yellow or brown as the heat of summer increases. It may become so dry that it is easily set on fire, destroying the fodder over many square miles of country. In the short autumn the land looks bare, but it is soon covered with the snow of winter.

Many grass-eating animals live on the steppes. The most important of these are horses, cattle, sheep, and goats. Cattle are the least important, for they prefer the soft rich grass of well-watered meadows, while the drier steppe grasses can be eaten by the other animals we have mentioned. The inhabitants of the primitive steppe are a pastoral people depending entirely on their flocks and herds. Mare's milk is one of their chief foods. The wool of the sheep is made into felt for tents and spun and woven into carpets and rugs. Their clothes are made of the skins of animals and the hides are tanned for leather.

Except in early summer when the grass is growing rapidly the animals soon eat up all the fodder available in one spot; so the flocks and herds and the people who look after them move slowly on from place to place. The horses and cattle go first, and are followed by the sheep and goats which eat

more closely. The tents are pitched on a favourable spot near a stream or a well, but never for long. Houses, furniture, and utensils have all to be made so that they can be easily carried and not easily broken. Only when winter comes do the steppe-dwellers retire to some sheltered spot where a more permanent dwelling made of stone may be erected. The troops of animals require many men to look after them. Every one rides a horse : every one can help in herding and watering the animals. The women look after the tents and the food and make the clothes and rugs.

In a region where everything is so uniform it is difficult to find one's way. The stars are used as a guide, and the people become familiar with them. The older men know well the slight differences there are in what seems at first sight a uniform plain. They remember the places where water may be found in a dry year or where there is shelter from severe storms, so they are naturally the leaders. The families live together, the old men and women with their children and grandchildren and even their great grandchildren and other relatives forming one great family. Everything belongs to the family, not to the individual. This type of family is known as the patriarchal family and is well described in the Book of Genesis.

These people can easily move as long as there is food. If the population grows too rapidly or a series of bad years come, like Jacob and his sons they are put to straits and migrate. They seek the more fertile agricultural country round the margins of the grass lands. Gathered into bands under a good leader the nomadic horsemen are a formidable foe. Again and again they have come westward across the grass lands to attack the more settled peoples of Europe to the west of them. The invasion of Attila, who reached as far west as Châlons in A.D. 451, is an example.

*Life in the Forest.* As a rule the forest and marsh check the advance of the horseman, and the people driven into the forest alter their mode of life ; they become hunters and

fishers ; the large family is broken up and individual strength becomes more important than the knowledge of age. The skins of the sables, bears, wolves, and foxes of the forest led to trade which was carried on mainly by waterways. Skins, honey, and wax were for centuries the most important exports of Russia. But the great forests yield many other products of value at the present day such as timber, resin, and turpentine which are all exported.

*Life in the Tundra.* In the far north the seasons are very different from those of the south for summer lasts only a few weeks. To a certain extent this is compensated for by the long days, as for several weeks darkness, if it comes at all, lasts only an hour or two each day. In winter, however, the days are for an equal period as short as the summer nights. For six or eight months in the year everything is frozen, and only for a brief period during the height of summer does the ground thaw. It is easiest to travel here in winter in sledges drawn by reindeer or dogs over the snowy ground. Hunting and fishing are the occupations as in the forests, but much less is to be obtained in this poorer region.

*Agricultural Development.* A little over one hundred years ago the Don Cossacks killed any one who ploughed the steppe land, and the pastoral life was still unbroken in that region. In the last century things have changed and the richer parts of both steppe and forest are cultivated, but the agriculture is not highly developed. In spite of this, owing to the large areas cultivated, the total amount of grain of all sorts grown in Russia is very great.

The most important wheat belt lies south of the latitude of Kiev (lat. 50° N.) in the fertile black earth region, a belt over 200 miles wide. This soil is so rich (p. 16) that crop after crop of wheat can be grown on it. Although owing to poor seed and bad methods of cultivation the yield per acre is not great,<sup>1</sup> yet the total wheat harvest of Russia is large on account of the amount of land that can be sown with it. North of the

<sup>1</sup> In England 36 bushels an acre are obtained ; in Russia only 12 bushels.

wheat belt oats and rye are cultivated extensively and some flax and hemp ; potatoes are grown everywhere except in the extreme north, while in the south of the Crimea and in the country north-west of the Black Sea the vine flourishes.

Both spring and autumn are very short in Russia, lasting only a few weeks, and consequently there is only just time for the ploughing, sowing, and reaping to be got through, and all have to be done under great pressure. Every hand must help and many Russians are farmers in the summer months who have another occupation in winter. Those who do remain in the country in winter have still much to do. There is not enough food for the farm animals during the winter, and the pigs and oxen are killed and salted or smoked for winter use. Fruits and vegetables are dried and solid soup is made by boiling down meat of all kinds. Spinning, weaving, basket-making, wood-carving, and other occupations are also followed during the winter days.

The life of the Russian people is essentially a peasant life. It is still partly pastoral and nomadic in the south-east and agricultural in the south and centre. With the growth of industries and railways new occupations are becoming important, but these industries have not advanced nearly as far as in most of the other countries of Europe.

*Industries.* As most of the eastern lowland is covered with glacial clays or wind-borne loess, there is little building stone. Timber in the forest and brick in the steppes are used. There is little mineral wealth in the flat sedimentary rocks except iron ores, which are widely distributed, and coal which occurs in the carboniferous rocks in four regions, i.e. near Tula in the centre of the plain, in the central Urals, in the Donets valley, and in the extreme south-west of the plain in Poland. The coal of each of these regions is put to a different use. In the Ural mountains where the rocks have been disturbed and folded many ores are found and the coal here is useful for smelting them. In the region of the Donets coal-fields much iron ore is found ; hence this coal is also used for smelting.

The Tula mines which are near Moscow supply this town and others in the area with coal for the factories which have recently grown up in the district. The chief manufactures are of cotton, linen, woollen, iron, and leather goods. The Polish coal is likewise used for manufactures of cotton, wool, and iron.

In many cases the factories are found in clearings in the forest and are active only in the winter months. The mill-workers of the factories become peasants in summer.

*Density of Population.* Many parts of the Russian plain are not very good to live in. Such are the marshy region of the Pripet, the frozen north, and the dry south-east. In all these areas, therefore, the density of population is very low. The south-east has less than thirty people to the square mile, the Tundra has even fewer, and the marshes are uninhabited. The southern part of the forest zone on the rich glacial clays, the black earth region, and the industrial areas have the densest populations. In the agricultural parts of these regions the density is from 75-150 per square mile and in the manufacturing areas round Warsaw and Moscow it amounts to over 150.

*Routes.* The long rivers form very important waterways in summer but they are closed to this traffic in winter. On the other hand, the frozen ground is much easier to cross than the swamps or soft soils in summer. Russia has few roads, but in winter when snow covers the ground there is no need for roads. The steppes become a sea of snow, and sledges can be drawn in all directions, even through the forests where they are not too thick. So before the days of railways it was easier to get about in winter than in summer in all parts of Russia away from the rivers. Ambassadors from western Europe two centuries ago were surprised at the delicacies brought from long distances to the Tsar's court, which could not by any means be produced in their own lands at that season. They had been brought from the south on swift sledges and the cold preserved them. In summer the



conditions are different. For a week or two after the spring thaws set in the slush and mud make movement by road impossible, but the waterways, now freed from ice, are the natural routes. A great deal of movement is carried on along them. Over 16,000 miles of waterway are navigable for steamers and nearly 9,000 more for other vessels, while rafts can float down nearly 30,000 more.

Of all these waterways the most important historically was that of the river Dnieper. By this route communication was carried on perhaps as far back as Phœnician times, and certainly later, between Greece and Constantinople and the *fur-producing regions of the far north*. From the Dnieper it was easy to reach the northern Dvina and the Baltic coast or to go farther north by the river Lovat and through Lake Ilmen. Kiev on the Dnieper (see p. 39) in the south and Novgorod on the Ilmen in the north came to be the chief towns on this trade-route which was known to the ancients as the Varangian way.

The roads are few and poor, and here, as in North America, the railway brought many places into easy communication with the outer world for the first time. Though there are few elevations to cause difficulties in the construction of railways, it is not always easy to build them because of the many rivers and marshes.

*Peoples.* The population of Russia does not all belong to the same race nor all speak the same language. The round-headed Mongolian peoples, such as the Lapps and Samoyeds, occupy the far north, and others such as the Kalmucks appear in the south-east. Around the Baltic the fair-haired, blue-eyed, tall Scandinavian type is fairly common. The rest of the people are shorter, rounder-headed, dark members of the Alpine race of Europeans.

If we think of Russia after the Ice Age had ended and its surface became inhabitable for man, we can see that there were three easy entrances into it. One was in the far north along the margin of tundra and forest by which the Mongolian

peoples from Asia penetrated. They remained as the Lapps and the Finns, and the languages spoken by these peoples differ entirely from that of the rest of the Russians.

Another route was by the grassy steppes on the south along which the Mongolian Kalmucks have entered and the great historical invasions of Russia taken place. The Goths, Huns, Bulgars, and Tatars have all crossed it from east to west, some passing on into other parts of Europe. The last of these peoples, the Tatars, took the most complete possession of the steppe.

The third route was from the mountains of the south-west. From here the great bulk of the Russian people, those of the Alpine race known as Slavs, probably entered the plain and passed gradually northwards, rounding the marshes of the Pripet.

Many consequences of the geographical uniformity of Russia have already been shown. There are other results still to be seen in the political life of the country. In a region so uniform, political boundaries are necessarily more or less indefinite and artificial and have varied greatly from time to time.

About the eighth or ninth centuries two states began to be organized in the southern part of the forest area centring round the rivers, the most important routes of those days. One was the Polish state in the west round the middle Vistula; the other the Russian state round the great Dnieper waterway. In the course of time Poland expanded down the Vistula to the Baltic plain and Danzig became its port, while Warsaw, near the confluence of several waterways, was its political capital.

The Russian power in the basin of the Dnieper had its first capital at Kiev, placed at the junction of the Desna and on the line where forest and steppe meet. Later on this position was found to be too open to attack and the capital of Russia was moved back into the forest area at Moscow, which though only on a small tributary of the great river Oka is extra-

ordinarily well situated for movement by water in every direction except the north-west. The whole of the open steppe land was taken from Russia by the Tatars coming from Asia in the thirteenth century, who gained possession of Kiev also. But in the struggle which then began between the more settled dwellers in the forest clearings to the north and the nomadic pastoral peoples of the steppe to the south the forest dwellers ultimately conquered, though it was not till near the end of the eighteenth century that Russia reconquered all the shores of the Black Sea.

The two regions, however, have never been very closely united, and there is a tendency for the steppe country to fall away and form a separate political division. This is seen in the movement at the close of the European War of the twentieth century to set up a Ukrainian republic in the central portion of the steppe (see p. 39).

#### THE NATURAL REGIONS OF THE EASTERN LOWLANDS

It has been shown in the foregoing pages that since the surface of the land is so regular the chief differences in the character of the country are due to the vegetation, and that this determines the main natural regions. They are therefore: (1) the Tundra, (2) the Coniferous Forest, (3) the Deciduous Forest, and (4) the Steppe.

The general character of these regions has also been described already, as well as the kind of life that is suited to them, but this life is modified in various ways in many parts, and though broadly speaking similar, the country is not quite the same throughout the whole of each of the four big regions. In the coniferous forest there is a difference between the rocky fenland in the west, with its numerous lakes, and the country to the east with a somewhat better soil but a more severe climate. In the deciduous forest there are several distinctions corresponding to the main differences in elevation which were described before. In the steppe region, the western steppe, where maize and the vine can be grown, is to be distinguished



for any part of the year, but no port was established there until recently (1915), because there is no waterway like the Dvina making an easy way into the interior. Now, in place of a waterway, a railway has been made to Murmansk on the western shore of the White Sea and this modern port may

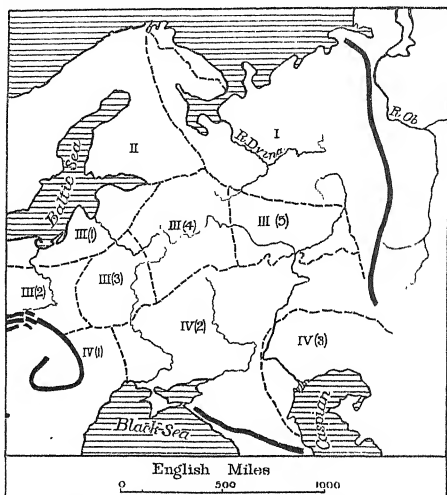


Fig. 8. The natural sub-regions of the Eastern Plain.

become more important than the old port of Archangel. The latter has a railway connecting it with Moscow, and it is not only a port for northern Russia but exports goods from Siberia, which can now be brought by railway to the town of Kotlas on the Dvina and then go by the river to the coast.

The exports of north Russia are not very many or very valuable. They are chiefly forest products—as little can be grown even in the south of this cold region—timber, tar, pitch, charcoal, wooden goods, tallow, linseed, and some flax. As the population is scanty in this poor country the centres are few, and the three already mentioned are the only towns of any importance.

*Coniferous Forest: Western Fenland.* This, which forms the chief part of Finland, is a land with much bare rock and thin soil, but with many lakes and a great deal of marshy land as well. Where there is enough soil to grow trees it is forested, and the forests and the fishing of the lakes and rivers are the chief sources of wealth, while the life of the people is mainly connected with these two kinds of occupation. There is, however, a third important natural resource to be found in the water-power, as in the Scandinavian peninsula, to which this region has considerable resemblance. It is, like Scandinavia, a plateau of old hard Archaean rock, though much less high (about 500 feet in average) and rises steeply from a coastal plain so that the rivers have to take rapid courses to the sea and thus provide a good deal of power. This is used for working up the forest products—for saw-mills for making wood-pulp and for paper-mills—and for other industries. Even with these industries the poor plateau does not support a large number of people, and the average density of population is only 30 to the square mile.

*Towns.* The towns, as might be expected, are mostly on the coastal plain. There are only four towns of any size and of these one alone is on the plateau. The other three are ports. Helsingfors, the modern capital, is much larger than the rest and has 227,000 inhabitants while Åbo, the ancient capital, once the chief centre of Finland, has only 64,000. The third town, Viborg (pop. 54,000), is the busier port owing partly to its nearness to Leningrad. The export trade of all three is chiefly in timber products. The town on the plateau is Tammerfors (pop. 54,000), built on a neck of land between

two large lakes on the western side, along which runs one of the two railways that cross the plateau.

Finland is not an easy country in which to move about, and there are few railways. These and the roads have to wind among the innumerable lakes and often go a long way round to reach their destination. A line runs all along the southern and western edges of the plateau with branches to the coast to the chief ports.

### Deciduous Forest

*Western Forest (North): Baltic Russia, Estonia, Latvia, and Lithuania.* The Baltic provinces, formerly wholly under Russian control, now largely belonging to the little republics of Esthonia, Latvia, and Lithuania, consist of low irregular morainic heights with a poor soil, and a slightly more fertile coastal plain. As in the case of most regions that have been recently and heavily glaciated there are many lakes and marshes, though not so many as in Finland. In the clearings of the forest the hardier crops, such as rye, hemp, and sugar-beet, are cultivated. The greater number of the people, however, live along the coast or in the valleys, and the towns are either ports, or are at crossing-places of the rivers.

At two points the sea cuts well into the land in great gulfs, and on them the two chief ports have grown up. At the head of the Gulf of Finland is Leningrad, placed where the Neva enters the sea. As it was for so long the capital of Russia, as well as a port, it became a very large town (pop. 1,600,000). The other great gulf, that of Riga, has the port of Riga (pop. 339,000) at its head, at the mouth of the Dvina, in an excellent position for inland communication along the river, and it is the third port in size and importance in the eastern lowland. Besides Leningrad, only Odessa on the Black Sea is larger. Being far the largest town in Latvia it was made the capital when this little republic split off from Russia in 1919.<sup>1</sup> There is no other position nearly as good for a port,

<sup>1</sup> It has decreased in size since, having had a population of over half a million in 1919.

and the other coastal towns, such as Reval (Tallinn, pop. 132,000), are much smaller, though their trade is not unimportant. Reval is also the capital of Estonia.

Of the river towns the most important is Dvinsk (Daugavpils, pop. 41,000) at the crossing-place of the chief river, the Dvina. The trunk route from Leningrad towards the south-west that runs south of the Baltic heights (see p. 44) passes through Dvinsk, which is thus at a great natural cross-road and had well over 100,000 inhabitants when included in Russia.

*Western Forest (South): Poland.* Between the Baltic Heights and the Carpathian Foreland is the lower country drained by the middle Vistula.<sup>1</sup> This is the plain of Poland. South of this comes the forested part of the Foreland, all of which has been at some time part of the old kingdom of Poland, though the boundary has varied greatly throughout the centuries, and for the last century and a half Austria has held the larger portion within its province of Galicia. This part of the Foreland is now returned to the Polish republic.

Besides the timber of the forest, flax and hemp are among the chief products, as in the forest area just considered, but, this region being farther south and therefore warmer, cereals are cultivated as well. The country being more productive can support a larger population than the Baltic provinces, and the density is still farther increased by the presence of coal and iron (see p. 24). Important oil deposits are found on the Foreland along the eastern part of the Carpathians and are extensively worked in Galicia.

*Towns.* The two chief manufacturing towns have grown up in the lower country to the north where communications with central and western Europe are easier. The first is Warsaw, on the Vistula, near the junction of several tributary streams, of which the Bug is the most important, and consequently at a convergence of natural routes. The railway following the lowland from Leningrad (see p. 14) crosses the river at this point, and a route from the Black Sea to the Baltic following

<sup>1</sup> This is not so low as the plains of the Oder and Elbe to the west of it.



the Carpathian Foreland to avoid the Pripet marshes passes through the town. Warsaw (pop. 937,000) is not situated where the Bug joins the Vistula, because of the floods of the former river, but a little higher up where the ground is drier. It was also easier to take the railway across at this point. The other large manufacturing town is Lodz (pop. 452,000) on the edge of the higher country to the south. It is not a natural route centre like Warsaw and is only half its size. In 1821 Lodz was a mere village of 800 persons, and its growth is due entirely to industry. Both manufacture wool and linen, for which the region supplies some of the raw material, and cotton, while Warsaw has an iron industry as well.

The towns of the Foreland owe their importance mainly to strategic considerations. The mountains to the south-west and the marshes to the north-east confined movement towards the steppes and the Black Sea to this Foreland; hence an important route was developed along it, and the chief fortresses were placed at points along this route that commanded passes over the Carpathians. Cracow (Krakov) and Lemberg (Lvov) are the most important of these fortress towns, and both have become manufacturing centres. Cracow (pop. 183,000)<sup>1</sup> occupies the more important position controlling the route through the Moravian gate—the gap between the Carpathians and the mountains of Bohemia opening a way from eastern Europe to Vienna (see p. 4)—and those along the Foreland to the south and down the Vistula to the eastern Baltic. It was the chief centre of old Poland, and though taken from her by Austria in the eighteenth century it has now been returned to Polish rule. With coal and iron so near, Cracow has developed important manufactures of machinery. Lemberg (pop. 212,000) has grown up farther out on the Foreland in a position where it can command all the passes over the central Carpathians, the section of those mountains where the passage to the middle Danubian plain is easiest (see p. 207). It is the capital of Galicia and has developed a variety of small industries.

<sup>1</sup> The population was four times as large before the break-up of the Austrian Empire in 1919.

*Central Forest: White Russia.* This is the lowland of the upper Dnieper basin that divides the last region from the central heights. Much of the country is swampy and infertile, containing the great expanse of the Pripyet marshes, still largely undrained, and is not very important. The population is therefore sparse and the towns few and small. They are found mainly near the higher ground that borders the region.

One of the most important is Minsk (pop. 132,000) through which the railway that has to skirt the edge of the Pripyet marshes passes on its way between Moscow and Warsaw. The railway from the Black Sea up the depression of the Dnieper crosses this Moscow-Warsaw line at Minsk, so that the town is an important route centre; hence its large population.

*Central Heights.* The central heights lie mainly in the forest zone, but the southern part, like the south of the Carpathian Foreland, extends into the open steppe. The region is important economically because it contains two coal-fields, one in the centre and one in the south (see p. 24). It is known as Great Russia, and is the region in which the power of the Russian Empire grew up and whence it expanded on all sides. Moscow, situated at a point close to the headwaters of all the chief rivers, built round a steep hill on which the Kremlin stands, was the centre of this power which extended outwards along the waterways. Now railways lead out from Moscow in all directions. It has always remained the intellectual capital of Russia, though the centre of government was for so long a time at Leningrad. The region, though nowhere of any great elevation, contains some of the highest land in Russia and suffers from five months of winter. This makes the feeding of stock difficult, and the land is not very fertile except in the south beyond the forest belt. Oats and rye, with some wheat, are grown where the forest is cleared, the hardier cereals being the chief crops.

*Towns.* The towns are not very important as agricultural centres in this rather unproductive region, but are important

as markets for large areas, and route centres, on account of the many waterways. They are therefore mostly bridge towns. Tver (pop. 106,000) and Yaroslav (pop. 114,000) on the Volga may be taken as examples. On the coal-fields there are several manufacturing towns of which Tula (pop. 153,000) is the most important, with its iron and steel works, and Moscow (pop. 2,000,000) itself has developed a modern textile industry.

*Eastern Forest.* The Volga Heights and those east of the river leading up to the Urals are very much alike and may be taken together. Again, only the northern part of the heights lies within the forest belt: the southern is steppe land. This eastern region is not separated from the central region by any marked line. The depression of the upper Don is slight and there is no wide lowland basin as in the Dnieper valley on the west.

The forest of this fifth sub-region is not much cleared and agriculture is of even less importance than in the preceding division. The Urals contain many minerals of which gold, silver, platinum, graphite, and copper are the most important, and the working of these has caused mining towns to grow up in the east, such as Perm (pop. 85,000) at the head of steamer navigation on the Kama. The Kama and the middle Volga running in opposite directions are both good waterways, and hence some important centres for the exchange of goods between east and west have grown up on their banks. Two of these are especially important: Kazan (pop. 179,000) near the junction of the two rivers controlling the trade of the Kama, and Nijni-Novgorod (pop. 112,000) at the junction of the Oka and Volga, a point to which many other subsidiary waterways also lead. This town is one of the greatest trading centres in Russia and is famous for an annual fair to which merchants come long distances from east, west, north, and south.

## Steppe

*Western Steppe: Rumania.* The western steppe consists of the southern part of the Carpathian Foreland and the lowlands to the south which sweep round the end of the Carpathian mountains—there known as the plains of Wallachia—and extend to the lower Danube. South of the Danube the country is different in character, being a high limestone plain rising steeply from the river bank and forming another natural region (see pp. 68-9). This western steppe land is not now included in Russia. Before 1919 the belt of country between the Pruth and the Dniester, known as Bessarabia, was Russian, and all the rest was Rumanian; now Bessarabia has been added to the Rumanian kingdom. The mountainous region of Transylvania has been transferred to the kingdom of Rumania as well (see p. 272).

In the east the land is drained by the Dniester, Pruth, and Sereth which flow from the Carpathians in long narrow valleys cut in the Foreland but widening out in the lowlands round the Black Sea. These valleys in the Foreland are sheltered and productive but apt to be marshy near the river. In the west shorter rivers flow from the Transylvanian Alps to the Danube. These rivers flood a good deal in their lower courses, and the land is marshy and unsuitable for a large population. The soil, however, is fertile.

A large proportion of the whole region is cultivated. Wheat is the most important crop but the hot summers allow maize and vine to be grown to a large extent, the latter chiefly on the slopes of the valleys of the Foreland. The lower steppe, especially in Wallachia, is a sea of wheat and maize at harvest time. Rumania exports a large amount of maize, more land being actually given up to the cultivation of maize than of wheat, but as the former is the principal food crop of the population less may be available for export and wheat may head the list. The country is amongst the chief wheat exporters of the world. A large amount of oil is found in Rumania round

the Carpathian edge, the greatest quantity being obtained from the district north of Bukarest. From this district a pipe-line has been laid all the way to the Black Sea coast at Constanza for the export of the oil.

*Towns.* The towns are all agricultural centres, generally grain markets. The chief centres of the Foreland are not in the narrow river valleys but on the open country between. The largest is Kishinev (pop. 114,000) on the higher ground west of the Dniester. Odessa is the port of this part of the country, and also for much of the central steppe with which it will be considered, while Wallachia depends on the Danube ports for its outlets. In the Wallachian plain the towns have to avoid the marshes near the Danube, and Bukarest (pop. 309,000) the capital of Rumania, situated on this plain, lies not on the great river but half way between it and the mountains on the edge of the marshy belt.

There is a series of smaller towns in a similar position east and west from Bukarest, in a line which the main railway also follows. The largest is Craiova (pop. 52,000), the wheat centre of the west with many flour-mills. The wheat and maize are exported by sea through the mouth of the Danube; but the navigation of the river is not naturally good, being often stopped by ice in winter, floods due to melting ice in spring, and low water in late summer. In consequence, though a great deal has been done by artificial means to improve the navigation of the river, only small ports are found on it till the head of the delta is reached, where the chief wheat port, Braila (pop. 66,000), has grown up, whence the crops can be shipped directly to sea. The Danube not only changes in volume so much in the different seasons but brings down such quantities of mud and silt from the mountains that the channels of the delta are constantly silted up, and only one is kept open—the Sulina channel—to allow boats to get to the upper part of the river at Braila, and there is no port of importance at the mouth of the river. A port has recently been established on the Black Sea south of the Danube at Constanza (pop. 28,000) which does

not freeze, to give Rumania a winter port. Much of the Rumanian oil is exported from here.

*The Central Steppe: Ukraine.* The central steppe land contains the fertile black earth country. It has only been cultivated during the last hundred years, but the old pastoral life has almost disappeared before the spread of tillage and the increase of population. Only in the eastern part is pasturage of much importance now. The agricultural prosperity depends almost entirely on cereals, especially wheat, though the black earth will grow a variety of products, and sugar-beet and linseed are cultivated to some extent. As a result milling, brewing, distilling and sugar-refining are carried on in the towns of the region.

*Towns.* Owing to the productiveness of the land large towns have grown up as agricultural centres. On each of the large waterways that cross the steppe is to be found at least one important town. On the Dnieper is Kiev (pop. 514,000), the most important of them all, the sixth town in size in all the eastern lowland. It has grown up at the point where the river leaves the forest zone, and, communication being easy in the more open country, it has become a great route-centre. Its position on the edge of forest and steppe has made it of historic importance (see p. 27) and it formed a kind of southern capital of Russia as it was before 1917.

On the Volga there is Samara (pop. 176,000) on the great bend of the river, a grain market, and, unlike Kiev, a new town, its importance dating only from the beginning of the recent agricultural development of the steppe. Lower down the river the milling centre of Saratov (pop. 215,000) has grown up. On the Don there is Voronesh (pop. 120,000), also an important grain centre.

The wheat of the region has to be exported through the Black Sea and several large ports grew up on its shores to deal with the trade. They are Odessa (pop. 421,000), the largest port in eastern Europe after Leningrad, Rostov (pop. 308,000), Kherson (pop. 59,000) and Taganrog (pop. 86,000).

As the southern (Donets) coal-field is within this region there is some industrial activity in the central part which has given rise to the large mining centre of Kharkov with nearly half a million inhabitants.

*The Crimea.* This peninsula contains two different districts. The north is a continuation of the flat steppe land but the south is mountainous. The climate of this southern part is different and much warmer as it is protected by the mountains from the cold winds from the north, and vine and all manner of fruits grow well. The population is densest in this mild region as people go there to escape the cold of other parts of Russia. Sevastopol (pop. 74,000) and Kerch (pop. 56,000) are the two ports at the western and eastern ends of the mountain area. They are naturally not very large or of much importance.

*The Eastern Steppes.* The dry steppe of the south-east round the north of the Caspian Sea has only a scanty pastoral population, and here the old nomadic life such as once was common over the whole grassland is still in existence. These pastoral conditions would not have led to the growth of any towns of importance, but the existence of the great oil-wells near the Caucasus has led to the development of a port of some size at the mouth of the Volga. Astrakhan, as a river port, has trade with all central Russia and as far as Petrograd: as a port on the Caspian it trades with the Baku oil region, and by the trans-Caspian railway with northern Persia. It has now a railway line from Saratov recently opened, and all these activities have brought its population up to 177,000 persons. At the great bend of the Volga, where the river turns south-eastward, and where the water route is carried farthest inland from the Caspian, is the town of Tsaritsin (pop. 101,000). A railway from here continues the route westward across southern Russia connecting all the towns on the similar bends of the other great rivers.

### III

#### SCANDINAVIA

*General Character.* In strong contrast to the east European lowland (outside the Finnish portion) is the massive Scandinavian Peninsula that borders it on the north-west, on the side of the Atlantic Ocean, beyond the shallow seas of the Baltic. The highland that forms the peninsula is continued in the north of the British Isles and there protects the plain of north-west Europe as Scandinavia does that of eastern Europe. There is thus a broken highland border along the Atlantic edge of north-west Europe. Scandinavia consists almost entirely of highland. A continuous high plateau stretches the whole length from north to south, a distance of 1,160 miles (cf. the distance from the White Sea to the Sea of Azov (p. 13). It is highest in the west and slopes gently towards the east. Owing to its height and northerly situation—it is nearly all north of 60° N.—a great deal of the plateau is covered with ice and snow and is without vegetation, but the lower levels are covered with coniferous forest (see Fig. 9).

From the high western edge of the plateau (varying from 5,000 to 7,000 feet) the land slopes very suddenly down to sea-level. In some parts it falls sheer into the water and in others a narrow coastal sill borders the highland, but there is never any large extent of coastal plain. In the east the land descends much more gradually by steps. These steps are wide gently sloping forested terraces with steep escarpments bounding each to the east. The last terrace is a coastal plain widening from north to south.

In consequence of these different slopes the western and eastern rivers are very different in character. The western edge of the highland forms the water-parting, so that the western rivers find their way rapidly down the steep slope to the sea forming short mountain torrents, while long rivers cut their way eastwards across the greater part of the peninsula.



These therefore are slower rivers and are partly navigable, though falls, where they descend from the level of one terrace to the other, break the navigation. These falls are useful in supplying water-power.

The eastern rivers run roughly parallel to each other at short and almost regular intervals. They all flow through lakes in their upper course as a line of lakes marks the change from the high plateau to the level of the second terrace. The two longest rivers are the Glommen which flows into Kristiania Fiord, and whose valley makes an important route from the south towards the west coast, and the Klar which drains into the great Lake Vener.

There are very many lakes in Scandinavia. The largest are in the south, lying in a depression that runs across the south-eastern end of the peninsula and cuts off a southern section of the upland—the Plateau of Småland—from the main mass. This depression, containing lakes Vener, Vetter, and others, offers an easy route from the east coast to the North Sea, and important towns stand at either end of it.

The east and the west coasts also offer a great contrast. The west, exposed to the open Atlantic Ocean, is one of the most indented coasts in the world. It resembles those of British Columbia and south-western New Zealand. A multitude of long narrow inlets known as fiords break up the coastline and sometimes they run back into the land for nearly 100 miles. The Trondhjem Fiord, with its many branching heads, is one of the largest and most important, and round its shores there is the greatest extent of lowland anywhere on the west coast. Hence the size and importance of the ancient town of Trondhjem. The Sogne and Hardanger fiords are also very long. The sides of the fiords are a great height (2,000 to 3,000 feet) and are rocky and steep—often too steep even for trees to find a hold. In some cases, however, there are narrow level terraces (raised beaches)\* at intervals along these rock walls which have some vegetation on them and where single houses can sometimes be built.

A long close chain of islands (Skjaergaard) protects the entrances to the fiords, which having deep water throughout are good safe waterways and afford the only easy means of communication in Norway—the western part of the peninsula.

The east coast is relatively smooth and unbroken and is backed by low sloping country forming a considerable coastal plain with plenty of room for habitation. And although it has not the deep protected inlets of the west many of the river mouths are wide, and good harbours are not wanting on this side either.

*Glaciers.* Scandinavia, as has already been explained, has many snowfields and glaciers. The latter are mainly on the high western slopes. The largest of the snowfields, the Jostedalsbrae towards the south of Norway, has as many as twenty-four big glaciers descending from it. But the present glaciers are only a small proportion of those of the past. In the Ice Age Scandinavia must have been like Greenland to-day, and many of the physical features of the country are, at least in part, the result of glaciers that have now disappeared. The great steepness of the fiords is largely the result of ice action. The glaciers that once moved slowly down the old river valleys, forcing away all obstacles in their path, widened them and planed off their sides. Earth-movements which lowered the level of the land are believed to be connected with the formation of the fiords, and when warmer conditions caused the ice to melt, and the sea entered the lower parts of the valleys, the inlets thus formed were bounded by precipitous rock walls. The old glaciers also scrubbed off all the loose surface material from the land over which they passed and much of the high country is therefore now bare rock.

Other features due to former glaciation are the long narrow ridges of low hills ranged in parallel lines found mainly in the east. They are formed of morainic material (see p. 15) accumulated by the glaciers in their descent from the highlands. Some have been left in rounded ridges known as drumlins, and in others the material has been rearranged and

reformed by the rivers that flowed under the ice when the melting first began, and these are known as eskers.

*Soils.* The greater part of the peninsula consists of the ancient Archaean rock which, as has been seen, edged the Russian platform (see p. 15), but the belt of highest ground towards the west is formed of old hard primary (Palaeozoic) rock which is lying on the top of the Archaean. These hard rocks do not weather sufficiently to form much soil, and on the highest parts the ice in the past carried off all that was formed, but on the lower levels the glaciers had to deposit their load, the finer material forming boulder clay and the coarser morainic gravels. These deposits cover large areas in east and south, and both form fairly good soils. Small patches of fine morainic gravel have been left sometimes on the higher ground, and these form the summer pastures to which the people take their cattle for the few warm months just as they do in Switzerland and all mountainous countries. The most fertile area of all is in the extreme south of Sweden—the eastern half of Scandinavia—where there is a patch of younger secondary rock that weathers to a very good rich soil. This forms the best agricultural land of the whole country.

*Climate : Temperature.* There are two factors that mainly affect the temperature of Scandinavia. These are elevation and winds; latitude is not so important here. Temperature falls very rapidly with elevation. Compare the temperatures at these three places, all on the eastern slopes of Scandinavia, at nearly the same latitude.

	<i>Latitude.</i>	<i>Height.</i>	<i>Temperature.</i>	
			Coldest month.	Hottest month.
Härnösand.	62° 38' N.	45 ft.	18.0° F.	59. 2° F.
Östersund.	63° 11' N.	972 ft.	16.3° F.	57. 1° F.
Röros.	62° 24' N.	2064 ft.	11.0° F.	52. 0° F.

Over all the high part of the plateau the winter temperatures are severe. The east coast is also very cold in winter while the west is comparatively warm. It is the warmest region for its latitude in the world. As an example, notice the difference

between the winters in Härnösand in the east and Kristiansund in the west. While Härnösand in latitude  $62^{\circ}38'$  N. has an average temperature of  $18^{\circ}$  F. in the coldest month of the year, Kristiansund, though a little farther north (lat.  $63^{\circ}7'$  N.), has an average well above freezing-point,  $33.7^{\circ}$  F. This difference is due partly to the height of the land that divides the east from the west. The prevailing winds in this part of the globe are the south-westerlies that blow from the high-pressure area just north of the Tropic. They come from lower latitudes so that they raise the temperature of these more northerly regions of western Europe. But the east is cut off from these warm winds by the high plateau, and is also exposed at times to cold winds from north Russia from which the western slope is sheltered. These differences are very important in an economic sense, for the harbours in the east are frozen and useless for some months in the winter while those of the warmer west are always open.

The difference in the winters is not the only climatic contrast between east and west. The range of temperature between winter and summer is very different on the two sides. The east is hotter in summer than the west. The average midsummer temperature at Härnösand as shown above is  $59^{\circ}$  F. and at Kristiansund  $56.5^{\circ}$ , making a range of  $41^{\circ}$  in the east and only  $22^{\circ}$  in the west. This difference is likewise the result of the fact that the west receives the ocean winds, which are cooler than the air over the heated land, while the east is sheltered from them by the high land. But the major part of the difference is due to winter conditions (see tables, p. 46).

*Rainfall.* The south-westerly winds after crossing the Atlantic are saturated with water, and the west coast of Scandinavia receives the full benefit of this. As the land rises abruptly close to the coast the air is forced up rapidly into regions of less pressure, expands, and cools, and the rainfall on the western slopes is fairly heavy. Bergen has an average precipitation of 71 inches in the year. Very little naturally falls on the high plateau or on the east. On the

high Dovre Fjeld the precipitation amounts to about 14 inches in the year, and at Kalmar on the east coast it is only 13 inches. Stockholm, though on the east coast, is less cut off from the rain-bearing winds as it has the lake depression behind it and so has a slightly higher rainfall than Kalmar, amounting to 17 inches. The rain falls throughout the year and there is no dry season, but summer and autumn are the wettest periods. A good deal of the fall of winter is in the form of snow: this has been included in the figures given.

*Cyclonic Storms.* The storms are often severe. The number of cyclones or moving low-pressure systems that cross the Atlantic during the year is very great—on an average one in every three weeks. A large number of these come direct to Scandinavia. A cyclone almost invariably brings rain, because in the centre the pressure of air is less than in the surrounding area, and so the air moves inwards, where on account of lesser weight above it it is able to rise, and when air rises there is usually rain. This is because in the less compressed layers of the atmosphere at a higher altitude air expands; in expanding it cools and can hold less water in suspension, and rain falls (see p. 19).

Place.	Latitude.	TEMPERATURE (Fahr. Degrees).					
		Winter.			Spring.		
		D.	J.	F.	M.	A.	M.
Kristiansund (west)	63° 7' N.	34.3	34.5	33.7	34.6	39.1	45.1
Härnösand (east)	62° 38'	20.0	20.5	18.0	26.1	35.5	42.7
Bergen (west)	60° 24'	33.2	34.0	32.3	34.9	41.7	47.8
Oslo (centre)	59° 55'	23.7	24.3	23.7	29.3	39.4	49.6
Stockholm (east)	59° 20'	27.1	27.3	26.1	29.1	36.7	46.3

Place.	Latitude.	Summer.			Autumn.		
		J.	J.	A.	S.	O.	N.
		J.	J.	A.	S.	O.	N.
Kristiansund (west)	63° 7' N.	52.8	56.5	56.4	50.6	44.3	37.6
Härnösand (east)	62° 38'	53.8	59.2	57.0	49.5	39.0	29.1
Bergen (west)	60° 24'	55.3	58.5	57.6	52.3	44.3	37.5
Oslo (centre)	59° 55'	60.1	62.8	60.4	52.2	41.1	32.1
Stockholm (east)	59° 20'	57.4	62.0	59.5	52.6	42.1	33.6

*Length of Summer Days.* The northerly position of Scandinavia causes it to have very long periods of daylight in summer and equally long periods of darkness in winter. The sun is above the horizon for a lengthening number of hours as you go north, till in the extreme north there is no darkness for between 50 and 60 successive days. Even at latitude  $65^{\circ}$  N., well south of the arctic circle, the sun only disappears for one hour on midsummer night, so that it is daylight all the time. The duration of the summer day and the winter night at different points within the arctic circle are shown in the following table :

Bodö—Lat. $67^{\circ}$ N.	Sun always above horizon, June 3–July 7.	Sun always below, Dec. 15–27.
Tromsø—Lat. $69^{\circ}$ N.	Sun always above horizon, May 19–July 22.	Sun always below, Nov. 26–Jan. 16.
North Cape—Lat. $71^{\circ}$ N.	Sun always above horizon, May 12–July 29.	Sun always below, Nov. 18–Jan. 23.

This great amount of summer sunshine is of much benefit to the plant life and makes up for the shortness of the summer season. With so many consecutive hours of light plants will accomplish their cycle of growth in fewer weeks than in more southerly areas, and so crops can ripen even in the very short summer as far north as lat.  $70^{\circ}$  N.

*Occupations and Trade.* The occupations are chiefly connected with the extensive forests and with agriculture. There is little coal in the peninsula but the water-power is enormous, and though in the past this has been used merely to turn the corn- and saw-mills, it is now applied in the form of electricity to driving machinery, and many industries have grown up. The most widespread of the industries are naturally connected with the forests, such as the making of matches, furniture, wood-pulp and paper. Though iron is found on the plateau—in the centre near Rönös, in Västmanland and at Taberg in Småland, and in the north round Gällivara (the most important deposits)—it is not manufactured to any great extent in the country but is exported largely. Machinery, especially electrical machinery, is, however made

to an increasing extent. The manufacture of woollen and cotton goods is also important, and in addition some industries of small bulk and considerable value have been developed, such as electro-chemical works.

The two commodities that are most important in the trade of Scandinavia are fish and timber, these being the chief products common to both Norway and Sweden. In Norway the forest products are exported mainly as raw timber or wood-pulp and to a certain extent as paper, while in Sweden more wooden industries have been developed. Chief amongst these is the making of matches and furniture. The dairy produce of Sweden with its greater extent of farming land is also important, and a good deal of butter is exported, particularly to Britain. Sweden has its trade in minerals as well which form a large part of its wealth. Iron is the most important now, though copper was plentiful in earlier days and Swedish copper was once famous all over Europe. It is now largely worked out. The iron ore, however, is still abundant and makes the best steel in the world, so it is much used for Sheffield cutlery.

*Conditions of Life.* The life of the farming families in the difficult western country is hard and often isolated. The houses may be separated by long distances difficult to traverse, and sometimes the only way to other habitations may be by water. Water in western Norway forms the best if not the sole road. The same is true to a certain extent of the life over nearly all Scandinavia, though conditions are modified in the less rugged east; but forests always make movement difficult. Here then much depends upon individual effort and there is no opportunity for the combined work of all the branches of a family living together, as in the open stretches of grassland in south Russia (see pp. 21 and 22). Hence the ideas and the outlook on life are very different, and a greater independence on the part of individuals is fostered. This naturally affects the political development of the country. A country such as Scandinavia trains its people in independence

and makes it fit for self-government and democratic in spirit. In this it is very different from Russia.

*Routes.* The roads across the desolate highland are few even now, and railroads are fewer still, while it is often difficult to keep these open in winter. Behind Trondhjem the plateau is lower and less wide than elsewhere, so a double reason is supplied for taking a railway across here, and east and west are connected by this route. From Sundsvall on the east coast the line follows up the Ljungar and Indal valleys whence it can cross the divide by a pass about 2,000 feet high and run down to Trondhjem (see Fig. 10). Oslo is also joined to Trondhjem by a line up the important Glommen valley. By one of the other valleys that open to the fiord, the Hallingsdal, Oslo is connected with the south-west coast at Bergen, the line having only a short bit of high plateau to cross leading over to the western slopes, and with the east coast at Stockholm by an easy lowland route through the lake depression. The only other line joining east and west is in the extreme north and its existence is due to the iron ore found near the head of the Gulf of Bothnia (Gällivara iron district), added to the severe climatic conditions there. The nearer eastern port, Luleå, being frozen for some months, an outlet for the iron had to be supplied on the open west coast for winter use, and a line has been taken across to Narvik on the Norwegian coast.

In the south of Sweden where the land is less rugged and difficult there are more railways. A trunk-line runs along the great southern depression (see p. 42) which also supplies a waterway, the lakes and rivers having been easily joined by canals. Another trunk-line connects the extreme north and south of Sweden, running roughly parallel to and not far from the coast, while various smaller lines south of the Stockholm depression connect the inland settlements with the many smaller ports.

The western coastal towns have not been connected by rail on account of the great physical difficulties, except here and



there where short lines have been constructed in the less precipitous parts.

*People and States.* The physical features of the peninsula with its great uninhabitable plateau, high and almost impassable, have caused the people to be divided into two sections, the western and the eastern, which, except in the extreme south, could have very little to do with each other. This fact has had an important effect on the history of Scandinavia. It was peopled by a tall, fair-haired, long-headed race that entered it, not from the frozen north, but from the lowlands on the other side of the Baltic, coming over easily by means of the many islands of the Kattegat that form stepping-stones across, and spreading up the coasts of the peninsula. Two portions were thus cut off from each other, and so though of the same race they came to form different political countries, the east Sweden and the west Norway. The connexion of both with Denmark across the Baltic was easier than with each other, and at one time it formed a connecting link between them, and the three countries were practically united in the fourteenth century. Sweden soon became strong enough to break away, but Denmark and Norway continued in close connexion down to the nineteenth century. An attempt was then made to unite Norway and Sweden, but it was not really successful, and after a century of forced union the two kingdoms separated again. The geographical division between east and west held good.

#### NATURAL REGIONS

It will be clear from the account already given that three regions may be distinguished in the peninsula, differing from each other in elevation and natural vegetation. They are:

1. Tundra and Fjeld.<sup>1</sup>
2. Forested highlands.
3. Coastal plain.

*Tundra and Fjeld.* In the frozen north there is, as in Russia, a tundra region where nothing but mosses and lichens

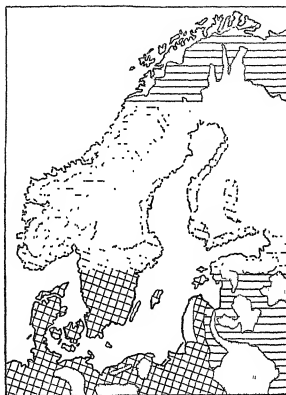
<sup>1</sup> or Feld.

can grow. It is therefore almost uninhabited, but a few Lapps live a nomadic life there, depending on their herds of reindeer which find sufficient support in the mosses. The highest part of the plateau, even in the south, is equally uninhabitable owing to its elevation.

It is too cold for trees and mostly covered with snow and ice, these snow and ice fields being known as fjelds. Below the permanent snow but above the tree limit the ground is covered with a poor scrub consisting of dwarf willows or sometimes of berry-bearing bushes such as whimberries.

#### *Forested Highlands.*

Below 1,600 feet in the north and 3,000 feet in the south the plateau is covered by forests, which occupy about  $34\frac{1}{2}$  per cent. of the whole peninsula, and, except in the extreme



*Feld or unproductive land* ==  
*Forests* ▤  
*Agricultural land* ▩

Fig. 9. Map showing surface conditions of Scandinavian Peninsula.

south, are coniferous in character. This region can support many more people than the first as the forests give an important means of livelihood, but the country is not fit for much agriculture though some of it forms pasture land available for the herds in summer. The hardy cereals, oats and barley, can be grown in the better spots fit for cultivation, but timber and wood-pulp are the chief products of the region. Owing to the nature of the land and its resources there are

no towns and the population is scattered. The density of population is only about sixty to the square mile.

*Coastal Plain.* With this plain may be taken the lake-covered depression of the south-east (see p. 42) which connects the two coasts. In all this lowland country cultivation is more widely possible, though even here, on the whole, pastoral industries prevail over the arable. In the north only the hardier cereals can be grown. Barley, which matures quickly, will ripen as far north as  $70^{\circ}$  N. and it is the chief crop between latitudes  $65^{\circ}$  N. and  $70^{\circ}$  N. The difference made by the long hours of daylight in the north is shown by the fact that barley ripens in eight weeks at its northern limit of growth and takes thirteen or fourteen weeks in the south of the peninsula. Oats, taking two or three weeks longer than barley to mature, form an important crop to the south of about  $65^{\circ}$  N., but wheat can be cultivated only in the extreme south in Scania. Here sugar-beet does well and it is grown and refined in the district. Taking all the crops together, however, only about  $9\frac{1}{2}$  per cent. of the peninsula is cultivated, and the pasture land occupies about  $6\frac{1}{2}$  per cent. more. Dairy-farming is developed to a great extent.

The other great occupation round the coast is fishing. On the west coast cod and herring are the chief catch. Salmon was once the most important fish of the eastern rivers, but now the coarser kinds, such as pike and perch, are cultivated more extensively. In the coastal area, therefore, these two occupations of farming and fishing allow of a much larger population than in the forest area, but in the west, round many of the fiords, the lack of level space limits the population. On the western mainland the level space is usually taken up by small farms which are often perched up in solitary spaces where narrow terraces on the sides of the fiords allow some grass to be grown. Accordingly the fisher population lives mainly on the islands, which are lower and more accessible than the mainland and therefore have a greater density of population, though an occasional bit of lowland round a fiord

enables people to congregate together and form a town (see Fig. 10).

*Towns.* These towns of western Scandinavia are small, however, compared to those of other countries. Bergen, the largest, has but 90,000 inhabitants, and Trondhjem, the next in size, 54,000.

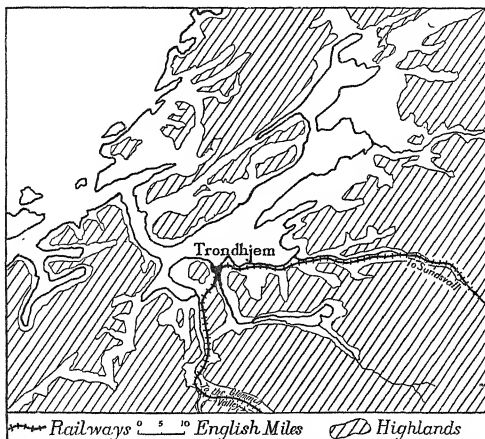


Fig. 10. Map showing the position of Trondhjem on a bit of narrow coastal plain round the fiord with valleys opening behind it to south and east.

The wider and more continuous lowlands of the east and south have more and larger towns and a greater density of population, amounting to nearly 200 to the square mile. Both the capital cities of Scandinavia are in the southern region, and both are sea-ports. Oslo (pop. 260,000), the chief town of modern Norway, is situated at the head of the fiord near the opening of the long Glommen valley and where various

other valleys converge (see p. 49). This is the best position for a town on that part of the coast, but the country round the fiord, being often in dispute between Norway and Sweden in old days, was far from safe, and Trondhjem, lying in the best and most productive bit of the west coast, was an important Norwegian town at a much earlier date. It was the ancient capital of Norway and is still the place where its kings are crowned. The fishing centre of Bergen near the entrance to the long Hardanger Fiord is the second port in importance in Norway, the chief on the west coast. It is as old as Trondhjem and was an important trading settlement in the fourteenth century.

Stockholm, the modern Swedish capital (pop. 474,000), grew up at the eastern end of the southern depression in a good defensive position on lake Mälär where it opens to a long inlet of the Baltic. The town is built on the islands and peninsulas that nearly close in that end of the lake, and hence it is both a strong and a beautiful city, surrounded and intersected by water. It does a large proportion of the trade of Sweden, as its harbour is not closed by ice, unless in exceptionally severe years, as are the eastern harbours farther north. The ports on the shores of the gulf of Bothnia are closed for from five to six months in winter.

Other towns, such as Upsala (pop. 30,000), the old capital, and Norrköping (pop. 61,000), now an industrial as well as an agricultural centre, are congregated on the fertile alluvial plain round Stockholm, but these are all small towns with less than 100,000 inhabitants. Norrköping manufactures cotton as well as having important saw-mills.

Corresponding in position to Stockholm at the western end of the lake depression is Göteborg (pop. 236,000), the second town in Sweden in size and industrial importance. It is a great fishing as well as trading port. The only other large port is Malmö (pop. 118,000) in the extreme south, which has grown to its present size because it is the outlet of the rich corn-growing province of Scania.

The distribution of minerals has determined the growth of a few more towns, but none of them is large. The chief are Gävle (pop. 39,000), about the centre of the east coast, and Luleå (pop. 10,000) in the extreme north.

#### IV

#### THE MEDITERRANEAN LANDS

*The Mediterranean Sea.* The Mediterranean Sea is nearly 2,500 miles in length, and is by far the largest land-locked body of water in the world. It is and has been of very great interest and importance to man for many reasons, of which the following are the chief: (1) It lies in a central position between Europe, Africa, and Western Asia; (2) it commands world trade routes of the utmost importance; (3) in days of primitive navigation, before the use in Europe of navigating instruments such as the mariner's compass, this sea was a thoroughfare between continents, whilst the oceans were still impassable barriers, because the long peninsulas broke up its expanse of water and made it possible to traverse the sea from end to end without for very long losing sight of land; (4) it lies in a climatic zone characterized by products of peculiar importance to man, so that the lands surrounding it became rich and prosperous early in the history of Europe.

The tidal waves which cause the ebb and flow of water round the coasts of the ocean, scarcely penetrate into the Mediterranean, so narrow is the Strait of Gibraltar, and consequently that sea is almost tideless. One important result of this fact is that many of the rivers emptying into the Mediterranean have large deltas, e. g. the Nile, Po, and Rhône, for no high and swift tides scour the estuaries and remove the silt.

*General Character of the Mediterranean Lands.* The lands surrounding the Mediterranean have a strong resemblance to one another. Excepting Egypt and Tripoli they are mountainous. They consist for the most part of resistant cores of

old and hard rock, flanked by high ridges of young folded mountains, all of about the same geological age as the Alps. Thus Spain has its central plateau of old rock bounded on the north by the Pyrenean and Cantabrian folds, and on the south by the ridges of Andalusia and Granada. They all except Egypt have the characteristic Mediterranean climate, found only in countries which lie on the western side of land-masses and between latitudes  $35^{\circ}$  and  $40^{\circ}$  (cf. California, Central Chile, South-west Africa, &c.). This climate (see p. 60), which is a transition type between temperate and inter-tropical, produces a special kind of vegetation, characteristic plants of which are the citrus, vine, olive, maize, and wheat.

Because of these resemblances, it is customary to group the lands round the Mediterranean in one large class.

Of the five mountainous peninsulas which surround the Mediterranean, three, Spain, Italy, and the Balkans, are politically European, while the other two, the Atlas Region and Asia Minor (with Syria) are geographically and historically so closely allied to Europe as to be always included in a description of European countries of the Mediterranean. The Atlas Region resembles Spain in physical structure, climate, and vegetation, and was continuous with the Iberian Peninsula until recent geological times (see p. 136). Asia Minor has a similarly close connexion with the Balkan Peninsula, while Syria, since it contains the Holy Land, and has, moreover, the same type of climate and vegetation as the other countries, also possesses strong claims to inclusion.

Among the lands surrounding this inland sea Egypt stands alone. It differs entirely in relief, climate, and products from the others. But because economically it is allied with Europe and cut off from Africa, it is customary to include it among the Mediterranean lands.

It is convenient to divide the Mediterranean countries into:

A. The Eastern Mediterranean Lands.

(1) The Balkan Peninsula.

- (2) Asia Minor or Anatolia.
- (3) Syria and Palestine.
- (4) Egypt.
- B. The Western Mediterranean Lands.
  - (1) The Atlas Region.
  - (2) The Iberian Peninsula.
  - (3) Italy.

## THE EASTERN MEDITERRANEAN LANDS

## THE BALKANS, ASIA MINOR, SYRIA, AND EGYPT

## INTRODUCTION

*Physical History.* The eastern Mediterranean lands comprise two mountainous peninsulas, the Balkans and Asia Minor or Anatolia, the low plateaus of Syria and Palestine, and the valley of the Nile, or Egypt.

The Balkans and Anatolia are closely connected as regards their physical history. The Balkan Peninsula consists of a triangular mass of very hard, old rock bounded on the north and west by the young folded ranges of the Balkan Mountains and the Dinaric and Albano-Grecian Alps (see Fig. 11). An eastward extension of this resistant block forms the central plateaus of Anatolia and Armenia, and these are bounded on the north by folded ridges sometimes called the Pontic or Pontine Mountains,<sup>1</sup> and on the south by the Taurus ridges and their westward extensions, the islands of Rhodes, Karpathos, and Crete.

The island-studded Aegean Sea was in recent geological time part of the Rhodope-Anatolian core; but violent and very recent earth-movements, possibly witnessed by primitive man, shattered the hard unyielding mass, and the rectangular block between the Grecian Peninsula and Asia Minor foundered, leaving a sea covered with unsubmerged fragments of the old mountain ranges, which fragments now form the Aegean Archipelago.

<sup>1</sup> Because *Pontus* was the old name for the Black Sea.



Syria is the elevated north-western edge of the Arabian Peninsula, but the fact that it has not the desert climate has always served to detach it from the main mass.

Egypt is the flood plain and delta of the Lower Nile, and



Fig. 11. Structure of the Balkan Peninsula.

differs from all the other countries round the Mediterranean in that it is a lowland, and has not a Mediterranean climate.

*Climate and Vegetation.* The climatic conditions of the Eastern Mediterranean are full of complexity when considered in detail, for the reason that it lies in the transition belt between the westerly winds and the north-east trades. Apart from the Saharan climate of Egypt, which is not a true European type at all, three major climatic types are repre-

sented : (1) the Central European, (2) the Mediterranean, (3) the Steppe. (See Fig 12.)

(1) The Central European climate, which prevails over the main mass of the Balkan Peninsula, is characterized by cold



Fig. 12. Distribution of climatic types in the Balkan Peninsula.

severe winters, hot summers, and rain at all seasons with a summer and autumn maximum. In its natural condition the ground under this climate is covered with forests of deciduous and coniferous trees, and when man intervenes maize is the chief cereal crop.

(2) The Mediterranean climate, which prevails in the Grecian Peninsula, on the Adriatic coast of the Balkan Peninsula, on the Pontic and Aegean coasts of Asia Minor, in Syria and Palestine, is markedly different from the Central European. It has mild winters, with little or no snow but much rain, and hot summers so rainless as to arrest herbaceous growth. In such a climate winter and early spring are the 'growing seasons', and midsummer the period of comparative rest, the wheat harvest coming in June.

The natural vegetation here is the evergreen forest, including (a) the conifers of the cold temperate zone, such as pine and fir, (b) the hard-leaf warm temperate trees like the evergreen oak, cork-oak, &c., whose narrow leaves expose the minimum surface to evaporation in the dry summer, (c) copse<sup>1</sup> and undergrowth of hard-leaved shrubs such as laurestinus, myrtle, laurel, rosemary, and the very important olive. The typical cultivated plants are the vine, orange, lemon, and wheat.

(3) The steppe climate is found on the Anatolian plateau, the Syrian uplands, and in a somewhat modified form in the eastern coastal region of the Balkan Peninsula. The steppe climate in these latitudes is one of great extremes, with cold stormy snowy winters, raw, damp springs, and scorching dusty summers and autumns. The very scanty rainfall<sup>2</sup> and the fierce north winds preclude any tree growth except along hill-sheltered stream valleys, and the natural vegetation is coarse tufty grass, which in the late summer is burnt so dry that it crumbles into dust.

With these few broad generalizations we will proceed to consider the separate countries of the Eastern Mediterranean.

#### THE BALKAN PENINSULA

*Introduction.* The Balkan Peninsula is usually considered to be bounded landwards by a line which follows the Danube,

<sup>1</sup> Local name *maquis* (French) or *macchia* (Italian).

<sup>2</sup> It should be remembered that it takes 10-12 in. of snow to equal 1 inch of rain.

the Save, and a little tributary of the Save called the Kulpa, and which from the source of the Kulpa turns south to a point near Fiume. This boundary, from a geographical point of view, is arbitrary, for a great navigable river running across a fertile and densely peopled lowland obviously forms no sort of barrier either commercial or strategic.<sup>1</sup> The fact that a good geographical boundary does not exist, and that the political and commercial interests of the various Danubian and Balkan states overlap and interfere with each other, has often led to unsettled conditions in this border region. (Cf. The Rhine Valley and Alsace-Lorraine.)

The area of the Balkan Peninsula is about the same as that of the British Isles.

The clue to the geography, and hence to the history, of the country is to be found in the fact that it is a mountainous, inaccessible, and relatively infertile area, traversed by one or two direct and practicable world routes. It lies in the very heart of the oldest civilizations of the Old World, and so the existence of natural routes through the masses of inhospitable highlands has made this country the bone of contention of southern Europe and of western Asia. And to precisely the same peculiarities of configuration has been due the perpetual internal strife among small nations which has characterized the Balkans. The country is too mountainous, and, as will be shown presently, too much lacking in any natural centre ever to be united as one national whole; and yet so few are the natural inlets and outlets and ways of communication, that each of the small states into which, until 1920, the land was divided, has waged a continual struggle to obtain command over some little tract of country which would give it free access to the outside world.

The present division into three good-sized countries, Bulgaria, Yugo-Slavia and Greece, gives free outlets to the last two, but to Bulgaria no ports of her own except on the Black Sea (see p. 120).

<sup>1</sup> But see p. 38.

*Peoples.* Racial and religious strife has been a prominent factor in Balkan unrest, and the present political divisions are an attempt to divide the peninsula as nearly as may be in accordance with racial boundaries (see pp. 272-3). The Greeks are one of the oldest races of the peninsula, and have lived in their present home since the dawn of history, always a seafaring and trading community. The Slavs pushed southwards from Central Europe in the sixth century, and were followed by the Bulgars. At the present day the continental mass is occupied by a composite race known as the Yugo-Slavs.<sup>1</sup> This so-called race has two divisions, the eastern Yugo-Slavs or Bulgars, and the western Yugo-Slavs who are Serbians and Croatians. The two are much alike in character, patient laborious agriculturalists with a hunger for land and strong feelings of patriotism. It seems probable that the national rivalry between the Serbs and Bulgars has been fostered by centuries of internal strife, and is not a fundamental racial antipathy. The state of Yugo-Slavia takes in the western division only of the Yugo-Slavs. The eastern division is Bulgaria.

### Natural Regions of the Balkan Peninsula

It is not an easy matter to distinguish the natural regions of so complex a country as the Balkans. Fig. 11 shows that the Central Highlands stand out prominently, as do the long chain of Alpine foldings on the west, and the sharply defined east to west fold of the Balkan Mountains. The only considerable lowland areas are the Maritsa basin, and the various smaller basins draining to the Aegean Sea and forming eastern Greece.

Comparing these natural regions with the present political divisions it will be seen that Bulgaria includes the Central Highlands and the Balkan Mountains, and the Maritsa basin above Adrianople. The western boundary of Bulgaria, however, lies a good deal east of the regional boundary which

<sup>1</sup> Yugo-Slav = South Slav.

is formed by the Morava-Vardar passage. Yugo-Slavia and Albania take in the northern and larger part of the western folded mountains, which consist of a barren limestone belt along the coast, and a more fertile inland belt which was formerly the kingdom of Serbia. Greece is made up of the southern end of the Alpine foldings, with the small lowland

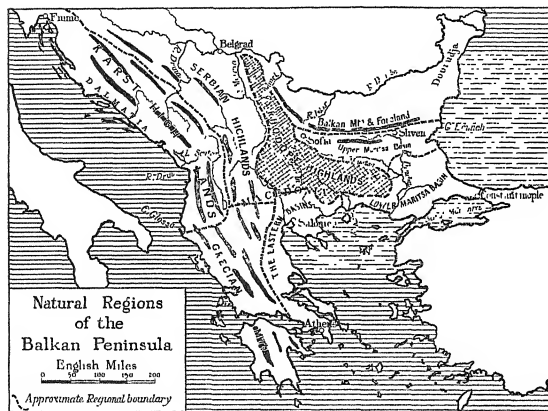


Fig. 13.

basins round the Aegean, and the much larger basin of the Lower Maritsa.

Expressing the above in tabular form, one gets a combined regional and political framework for a systematic study of the peninsula :

I. Bulgaria.

- a. The Central or Rhodope Highlands.
- b. The Balkan Mountains and Foreland.
- c. The Upper Maritsa Basin.

2. Yugo-Slavia and Albania.
  - a.* The Karst Limestone Ranges.
  - b.* The Serbian Highlands.
3. Greece.
  - a.* The Grecian Alps.
  - b.* The Basins of Eastern Greece.
  - c.* The Lower Maritsa Basin.

## BULGARIA

*General Character.* This country has a great diversity of relief, soil, and climate, and its different regions are so cut off one from another that intercourse between them is difficult. The two fertile areas, viz. the Balkan Foreland and the Upper Maritsa basin, are separated by the Balkan Mountains, which are crossed by several roads and one railway, and it should be noticed that Sofia, the capital, stands at the one point where routes from both these areas naturally converge.

*Climate.* The climate of Bulgaria as a whole is of the Central European type (see p. 59 and Fig. 12), though the Upper Maritsa verges on the Mediterranean, and the Black Sea coast on the Steppe type. In July the country lies between the isotherms  $74^{\circ}$  and  $77^{\circ}$  F., and in January isotherm  $32^{\circ}$  F. passes through northern Bulgaria. Hence it will be seen that the range of temperature is very large. The higher parts of the mountain regions have an elevation of 3,000 to 9,000 feet, and so would be from  $10^{\circ}$  to  $30^{\circ}$  colder in winter and in summer than the lowlands. The prevailing winds are from the north and north-east, and these, coming from the Russian steppes, are very cold in winter, but hot and dry in summer.

Owing to the varied relief, the rainfall varies greatly in different parts, but broadly speaking it amounts to between 20 and 30 inches annually.

	<i>Winter.</i>			<i>Spring.</i>			<i>Summer.</i>			<i>Autumn.</i>			
	D.	J.	F.	M.	A.	M.	J.	J <sup>v</sup> .	A.	S.	O.	N.	Ann.
	TEMPERATURE (Fahr. Degrees)												
Sofia.	31	27	29	39	50	58	65	69	67 <sup>c</sup>	60	52	40	49
	RAINFALL (Inches)												
Sofia.	1.44	1.52	1.44	1.48	2.08	3.44	3.28	2.76	2.16	1.96	2.48	1.96	26.00

*Minerals.* Bulgaria is said to possess great mineral wealth, but at present, owing to lack of suitable fuel, railways, and capital, only a little poor coal and some copper are mined.

### Sub-regions of Bulgaria

As has been said, Bulgaria consists of (a) the Rhodope Highlands, (b) the Balkan Mountains and Foreland, and (c) the Upper Maritsa Valley.

(a) *The Rhodope Highlands. General Character.* The Rhodope Plateau is a triangular mass of old and hard rock, bounded on two sides by young folded mountains, and on the third by the Aegean Sea. It will be noticed (Fig. 11) that the angles of the triangle are in the neighbourhood of Belgrad, Salonica, and Constantinople, and this is not a chance coincidence, but is due to the fact that the two most important routes of the peninsula start at the apex Belgrad, and skirt along the sides to Salonica and Constantinople near the angles of the base. Like most old land masses it is bleak and inhospitable, and tends to repel population.<sup>1</sup> During the epoch of the Alpine foldings it was much fractured, for it is characteristic of old consolidated rock that it will not fold, but responds to pressure by cracking. Hence it consists of block mountains (see p. 154) intersected by narrow steep-sided rift-valleys deepened by rushing torrents, and it is therefore a region of few practicable routes. The important highways of the peninsula skirt, but do not cross it.

The highest part of these uplands is the Rhodope or Despoto Dagh (6,000–9,000 feet), which forms the water-parting for several of the chief rivers of the Balkans (Fig. 14). The land upheavals above mentioned have had a dislocating effect on the Balkan rivers, so that their courses are everywhere far from normal. The streams do not radiate and converge symmetrically, for they have been diverted from their natural course by the earth-movements, and as a result a great many of the important rivers make a sharp elbow turn in their upper

<sup>1</sup> Cf. Scottish Highlands, Central Plateau of France, &c.



or middle course, and in so doing lose much of their value as trade routes (e.g. Maritsa, Isker, Vistritsa). The absence of any great natural centre like London or Paris, and hence ultimately the absence of any national unity in the Balkans, is to a large extent due to this absence of converging streams and natural routes.

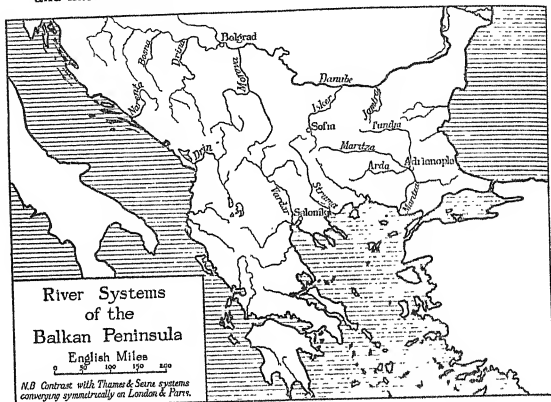


Fig. 14.

*Natural Vegetation.* The natural vegetation, like that of all the mountainous regions of Central Europe, consists of coniferous and deciduous forests and grass. Oak, ash, beech, and pine are common trees, but the forests have been largely destroyed by ruthless cutting.

*Agriculture.* The chief source of wealth is agriculture. In the valleys wheat, maize, rye, barley, and oats are grown, and on the uplands cattle, sheep, goats, and horses are kept. The ignorance of the peasants and the indifference and rapacity of the official classes have kept agricultural methods in a most

primitive condition. However, tobacco, cereals, live-stock, hides, and eggs are exported.

*Communications.* Means of communication are, of course, very primitive. High roads run across the north-western part, joining up the two main routes which lead from Belgrad to Salonica and Constantinople respectively. To one or other of these two arteries all the trade of the region has to be carried over mountainous roads or mule-tracks.

*Population.* The population of such a region is of necessity sparse, and its mode of life primitive; but, as in the Scottish Highlands, there is little or no dire poverty. The peasants live on small holdings, and each homestead provides practically all its own necessities of food and clothing. Hence luxuries are few, and a strong and hardy race is produced.

Towns there are none, and even villages are for the most part widely separated. Along large valleys such as those of the Struma and Kara (or Mesta) there are, however, many settlements. These rivers are fed by numerous short brooks which have cut deep, narrow glens or combes in the hard rock. A path runs up each glen, and near the mouth stands a small village. Where several combes converge one finds a large village at the junction of the paths, and a small settlement part of the way up each combe. In short, the distribution of settlement is remarkably like that of the Scottish Highlands, where the produce of the lonely croft is brought to the village at the mouth of the glen, and thence sent down the main valley to the lowlands.

*The Balkan Mountains and Foreland. General Character.* Partly abutting on the Rhodope highlands, and in part separated from them by the Maritsa basin, of which we shall speak presently, lie the Balkan Mountains<sup>1</sup> which run in a shallow crescent-shaped curve from the river Timok south and east to Cape Emineh on the Black Sea. The range, although it has a nucleus of old and hard crystalline rock, is mainly formed of secondary limestones and sandstones. It

<sup>1</sup> Known in Bulgaria as the Stara-Planina.

is from twelve to thirty miles wide, and faces steeply with limestone escarpments to the south, but slopes in a gently inclined limestone plateau to the Danube. The range is not unbroken, but consists of numerous masses of mountains. The central portion, from the Isker Gorge to about the meridian of the town of Sliven (Slivno), is much the highest, reaching an average height of 5,000-6,000 feet.<sup>1</sup> The forms of the ridges and peaks are rounded and dome-shaped, and the contours are further softened by the forests of oak, beech, and fir which clothe the slopes. The Balkans do not form an insuperable barrier to communication, as they are crossed by many practicable roads. Although the central mass is the highest, it is the narrowest, and hence the most easily crossed. The Shipka Pass (4,375 ft.) is utilized by the most important of the numerous transverse roads.

The plateau which forms the northern foreland of the Balkans is in sharp contrast to the valleys south of the ridge, in relief, climate, and products. The former, as has been said, is a limestone region sloping gently to the Danube. The soil is rich, but so loose and porous that the very moderate rainfall sinks at once into the ground and leaves it far too dry. The rivers cut deep gorges in the limestone, and thus are of little use for irrigation, while the gorges render east to west communication difficult. Fierce north-east winds sweep over the plateau at all seasons, bringing snow and sudden frosts in the winter, and raising dust storms on the powdery limestone roads in the summer.

*Economic Development of the Foreland.* Good crops of cereals are raised, wheat on the dry plateau and maize in the wetter valleys, and large numbers of sheep and cattle are kept. The plateau is practically treeless, and in the eastern part (the Dobruja, belonging to Rumania) where typical steppe conditions prevail, wood is so scarce that bricks of straw and dung are the ordinary fuel.

The chief export trade is in cereals which are exported by.

<sup>1</sup> Peaks—Yumrukchal 7,790 ft: Vezhen 7,220 ft.

the Danube. The autumn harvests have to be gathered and dispatched in all haste, for early frosts sometimes freeze the Danube ports (see p. 38).

*Routes and Towns.* In the many wars of the peninsula the Balkan Mountains have usually been a centre of military operations, because they are more easily crossed by armies than any of the other mountain ranges. Hence nearly all the towns of the northern plateau are primarily fortresses built to protect the passes of the mountains and the river crossings. Two lines of fortress towns are clearly distinguishable. One is along the south shore of the Danube<sup>1</sup> which, unlike the very marshy north shore, is firm, high, and well adapted for town sites; and one is at the junction of the limestone plateau with the alluvium of the Danube plain, where Plevna, Tirnova, Shumla, &c. guard the limestone cañons which lead to the passes across the main ridge. The Danube towns serve also as river ports for the export of produce, while the upper series act as market-towns for collecting and distributing the produce. The latter are connected by an important strategic and commercial railway line which gives them access to the sea-port of Varna on the Black Sea, and to the military and commercial centre of Sofia, which the line reaches by way of the steep and difficult Isker Gorge.

Sofia (pop. 213,000) stands in a fertile depression surrounded by hills, at the place where the Balkan Mountains and the Rhodope Highlands meet. The town is primarily a route-centre, and hence a fortress. It commands (*a*) the passage into Bulgaria from Belgrad, (*b*) the above-mentioned Isker Gorge route to the Danube, (*c*) the road to Uskub<sup>2</sup> on the other main route, which is at present followed by a railway only as far as the Bulgarian frontier. The suitability of its site for the capital city is obvious, for it is in the only place equally accessible to the two most productive and populous areas of the country.<sup>3</sup> Although primarily a fortress, a capital

<sup>1</sup> i. e. Lom, Nicopolis, Ruschuk, Silistria, &c.

<sup>2</sup> i. e. Skoplie.

<sup>3</sup> Cf. Shrewsbury, the most central meeting-place for mountainous Wales, although outside the Welsh borders.

and a railway centre, Sofia has various manufactures such as silk, attar of roses, cloth, tobacco, and a considerable export trade in these articles as well as in the skins, cereals, and dried fruits which are produced in the surrounding districts.

*The Upper Maritsa Basin: General character.* This lowland is the most favoured by nature of any part of Bulgaria, for it has the mildest climate, the richest soil, the most valuable products, the best natural routes and outlets, and hence the largest towns.

It is divided into two by a small ridge parallel to the Balkans, known as the Anti-Balkans (see Fig. 18). North of this ridge is a narrow valley drained by the Tunja, and known as the Vale of Kazanlik. This is so warm and so sheltered from the strong north winds, that it has become a rose garden for the production of attar of roses, and has also an abundance of corn and wine. Kazanlik is its chief town and Burgas on the Black Sea its port.

The valley of the Maritsa is almost equally fortunate in soil and climate. The climate, as has been said, is of a modified Mediterranean type, and the products are the typical Mediterranean ones,—wheat, maize, tobacco, wine, and raw silk.

*Towns and Routes.* Philippopolis (84,000) is the chief town of the Upper Maritsa. It stands among granite hills, strongly fortified, and is surrounded by a fertile agricultural region. At the head of navigation on the Maritsa, and with railway outlets to Burgas on the Black Sea, Dedeagach on the Aegean, and Constantinople, it has a large trade in the typical local commodities, such as rice, attar of roses, wheat, wine, tobacco, skins. Its small size is due partly to the fact that Sofia and Adrianople overshadow it, but chiefly to the backward state of Bulgaria's economic development.

#### YUGO-SLAVIA AND ALBANIA

*General Character.* The lands which in the treaty of 1919-20 were defined as Yugo-Slavia included the older states of Serbia and Montenegro, as well as Bosnia and other parts of

the old Austro-Hungarian Empire. Albania still remains a separate state.

Except for the strip of the Plain of the Middle Danube (for which see p. 210) the whole country is mountainous, and has no considerable lowlands.

The mountains, as has been said, are southerly extensions of the Alpine foldings. The ridges are parallel to the Adriatic coast, their trend altering at Scutari and again at Cape Glossa. Their general height is 3,000 feet and upwards, but they are much dissected by deep and narrow gorges.

Near the coast limestone is the prevailing rock, and this gives rise to a peculiar type of country known as the *karst*, whose characteristics will be considered below. Behind the limestone is a belt of sandstones, carboniferous rocks and flysch<sup>1</sup> which makes a varied country quite different from the coastal region.

*Coastal Types.* The coasts of Dalmatia and of Albania are examples of two well-marked and contrasting types. In Dalmatia the land has subsided in recent geological time, allowing the sea to break through the coastal ridges and invade the longitudinal valleys behind. This has given rise to long, narrow islands separated from the mainland by channels and lagoons. This type of coast tends to occur wherever mountain ridges lie parallel and close to the sea in a subsiding area,<sup>2</sup> and is known as the Dalmatian type because it is so strongly developed here. It forms good harbours, and is usually occupied by a fishing and seafaring population, but, as will be seen presently, its good harbours are seldom great ports (p. 75).

The Albanian coast is an area of recent elevation, where broad marshy flats have been gradually emerging from the sea. Such coasts are usually harbourless, difficult of approach from the sea, unhealthy and thinly peopled. The type is so common<sup>3</sup> that no special term is applied to it.

<sup>1</sup> A geological term applied to certain beds of soft marls and sands.

<sup>2</sup> Cf. South Chile.

<sup>3</sup> Cf. Syria, Aquitaine, Romney Marsh in Sussex, &c.

*Climate.* The climate of inland Yugo-Slavia is of the Central European type,—a fairly evenly distributed rainfall with a summer maximum, and a wide range of temperature. Along the sea-board the Mediterranean type of climate is met with, much milder in winter, and with a winter maximum of rainfall.

As has been said, in a very mountainous region there is no real uniformity of climate, local conditions making great variations in temperature and rainfall. Thus places exposed to the strong and cold north-east wind, the bora, have severe winters and not much rain, while places protected on the north and open to the south-west wind, sirocco, get a heavy rainfall and scorching heat in summer.

The following figures illustrate both types, Sarajevo open to the north, and Fiume and Scutari open to the south-west.

	TEMPERATURE (Fahr. Degrees).											
	<i>Winter.</i>			<i>Spring.</i>			<i>Summer.</i>			<i>Autumn.</i>		
	D.	J.	F.	M.	A.	M.	J.	J <sup>y</sup> .	A.	S.	O.	N.
Fiume. <sup>1</sup>	43	41	47	55	62	69	73	72	66	58	49	43
Scutari. <sup>1</sup>	44	39	42	49	57	65	72	78	77	70	61	50
Sarajevo. <sup>1</sup>	30	37	31	39	49	57	63	67	66	60	51	40

RAINFALL (inches).

	D.	J.	F.	M.	A.	M.	J.	J <sup>y</sup> .	A.	S.	O.	N.	Ann.
Fiume.	5.44	3.80	3.96	5.8	5.8	4.92	5.52	2.88	4.28	7.28	9.52	6.96	64.72
Scutari.	6.32	4.72	6.08	6.72	5.04	3.32	2.12	1.56	1.04	3.32	7.52	8.60	56.56
Sarajevo.	2.84	2.36	2.24	3.08	2.36	2.76	3.12	2.36	2.52	2.88	4.08	3.12	32.48

*Vegetation and Occupations.* Except in the drier limestone parts, which are bare or covered with scrub, Yugo-Slavia is forested with beech, oak, and other deciduous trees. Farming and the keeping of sheep, goats, and pigs, are the chief occupations. Cereals, sugar-beet, hemp, tobacco, and mulberry are grown, and the plum-orchards of northern Serbia are so extensive that large quantities of prunes are exported. Maize is the chief cereal, and is in many parts the staple food of the people, as well as of the pigs and fowls which are kept in large numbers.

<sup>1</sup> Elevations: Fiume, 50 feet; Scutari, 34 feet; Sarajevo, 1,870 feet.

*Minerals.* The extent of the mineral resources of Yugo-Slavia is still unknown. In northern Serbia there are large and valuable lead and copper mines, and a good deal of iron is mined. Fine building-stone is abundant. Serbian Macedonia is said to be rich in minerals of various kinds, but as yet the mines are not sufficiently worked for definite facts about them to be known. Bosnian minerals, having been exploited by Austria, are more developed, and coal, iron, and salt deposits are worked.

### Sub-regions of Yugo-Slavia and Albania

As has been indicated, this section of the Balkans includes two very different types of mountainous country:

- (a) The Karst ranges of limestone.
- (b) The Serbian Highlands, a region practically co-extensive with Serbia of the 1913 treaty.

*The Karst Ranges. General Character.* Along the whole coast of Yugo-Slavia, and inland for a distance varying from 50 to 100 miles, are high limestone ridges, possessing in a marked degree all the characteristics usually found in a mountainous limestone region. In Bosnia this belt is called the *Karst*, and this local name has of late years been used by geographers to designate similar regions in other parts of the world. Although the name is locally applied only to the Bosnian ridges, the same characteristics with certain modifications persist throughout Montenegro, Albania, and western Greece.

Limestone escarpments, ridges and plateaus rise one behind the other from the coast inwards, barren, waterless, scorchingly hot in summer, forming a mountain barrier not high (peaks between 6,000 and 8,000 feet) but exceedingly difficult to cross. Rushing torrents have cut deep precipitous gorges in the limestone, but the streams are not navigable, and the gorges are too narrow and rocky for roadways. Hidden away in these fastnesses are a great number of little depressions sunk several hundred feet below the level of the uplands, oblong in shape



but not at all like ordinary valleys. These basins are called *polyen*, and are generally supposed to be due to the dissolving action of water on the limestone. They are flat-bottomed, often marshy or even flooded in wet weather, but covered with very fertile soil. They vary in size, some being only a few square miles in area, others thirty or forty miles long and three

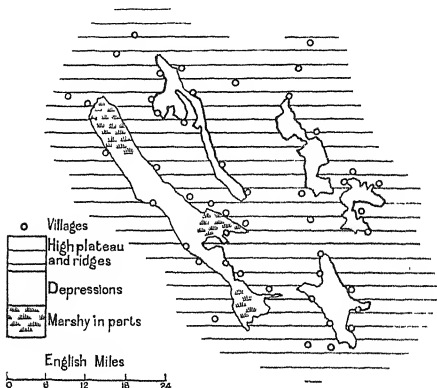


Fig. 15. A group of *polyens* near Spalato. Note the arrangement of the villages along the edge of the fertile depressions.

or four wide (see Fig. 15). The peculiarity of the true *polye* is that it is not drained by any surface stream, and so has no outlet along which a road can easily be made. This type is commonest in Bosnia, but the whole limestone belt is characterized by similar depressions, some with and some without surface drainage. They are so fertile that the population is concentrated round them, villages often making a continuous line of houses round the rim of the basin.

Two good-sized rivers, the Narenta and the Drin, have cut winding gorges through the ridges to the sea. The valley of the Narenta makes an important route, while the Drin has near its mouth a good-sized alluvial plain whence comes most of the corn used in Montenegro and Albania.

*Occupations.* Agriculture and herding are the only important pursuits of the Karst belt. On the floors of the *polyen*, which are rather too wet for wheat, maize and rice are grown, and on the lower slopes olives, vines, mulberries, figs, melons, oranges, &c. But these fertile basins are so isolated that import and export are much hampered. In Albania few roads of any kind exist, and produce is carried to market either by mules or by men and women. In Bosnia conditions are somewhat better, but roads are still very few. On the limestone pasture-lands cattle, sheep, and goats are kept, and give rise to small home industries of leather-working and weaving.

Along the Dalmatian coast fishing is important, but, as said above, in Albania the coast is flat, unhealthy, and without harbours, and the Albanians do not fish. They use the coastal marshes as winter pasture for their herds.

*Routes and Towns.* Along the Dalmatian coast the numerous good harbours already mentioned never develop into large ports because the hinterland is so difficult to cross that not much trade can get in or out. The only railway leading from the interior to the coast is that which follows up the Narenta gorge and down the Bosna valley to the Hungarian plain. But the Narenta gorge is so deep and precipitous that very few branch roads can enter it, and so it serves but a very limited region.

An important Roman road followed the Narenta route, and at Sarajevo it sent out two branches, one to Salonica, and one to join the great Constantinople route at Nish. Hence Sarajevo early became a good-sized town, and has still a population of over 60,000. Mostar is a little place of 8,000 people. The harbour and terminus of the Narenta valley route is Gravosa (Gruž), a small place adjoining the old town

of Ragusa which it has now entirely supplanted. Gravosa has a good natural harbour, and when the railway has been extended and linked up with the Serbian railways, it will probably become an important outlet for Serbian produce. At present it has only some 1,600 people.

Spalato (pop. 25,000) has the best natural harbour on the coast, and this has been improved by long breakwaters and fine quays. It is the chief commercial centre of Dalmatia, but has very poor connexions with its hinterland.

Fiume (pop. 50,000) before the European War was the only port of Hungary, and as such was connected with Budapest by road and rail. The limestone hills behind the town are narrower and easier to cross than elsewhere, and the harbour is well protected, so that the port has considerable strategic value, and has been a bone of contention between Italy and Austria. By the Treaty of Rapallo, 1920, the town was created an independent territory and in January 1924 awarded to Italy.

Before the European War Albania had no railways and no good roads. Two short, light railway lines have been built for military purposes, running inland for a short distance from Scutari and Durazzo, and these, together with new motor roads joining Durazzo and Valona (Avlona) with Monastir and Salonica, have opened up the country considerably. The road from Durazzo to Monastir utilizes the valley of the river Skumbi, thus following the course of the Roman Via Egnatia.

Though only so recently made practicable for modern traffic, the above routes are all old natural thoroughfares, and hence Scutari and Durazzo were important Roman settlements. Scutari has still a certain amount of trade in hides, wool, and tobacco, and is a town of some 24,000 people, but Durazzo is a mere village.

*The Serbian Highlands. General Character.* The broad belt of sands, marls, and limestones behind the Karst is an equally mountainous but much more fertile tract. Here the hills are more rounded, the valleys larger and more open, the

water-supply fairly abundant,<sup>1</sup> and means of communication somewhat easier. Good-sized agricultural lowlands open on to the Morava-Vardar route, while the mountains are densely forested with beech and oak.

North of Nish the mountainous region gradually changes into a hilly lowland, broken by the wide plains of the lower Morava.

*Occupations.* As everywhere in the peninsula agriculture and herding are the chief industries. Maize is the staple food of the people, vines and tobacco the other important crops. Sugar-beet cultivation is becoming important and the orchards of north Serbia (see p. 72) produce large quantities of prunes for export.

*Routes and Towns.* Until the 1920 treaty this region had no free outlet except to the Danube. The other natural outlets were down the Vardar to Salonica, and down the Narenta to the Adriatic, but these were to some extent barred by political frontiers with their accompanying customs duties. The present boundaries give Yugo-Slavia free access to the Adriatic, but not to Salonica.

The towns of the Serbian region are either railway centres like Belgrad and Nish, or market centres like Uskub and Monastir, which collect the produce of the fertile basins in which they stand.

Belgrad (pop. 225,000) stands on a triangular piece of high ground bounded on two sides by the Save and Drave, whose confluence is at the apex of the triangle. Although it is close to the northern boundary of Yugo-Slavia<sup>2</sup> it is essentially a Balkan town, for towards the north, east, and west it is isolated by marshes which are not crossed by any high roads, while from the south all the main high roads converge on it. Its international importance lies in the fact that it commands the entrance to the two chief Balkan routes that lead to Constantinople and to Salonica and Athens respectively

<sup>1</sup> Because the rock is less porous.

<sup>2</sup> It was actually on the frontier before 1920.

(Fig. 17) and also the waterway of the Lower Danube. All the western European railway-lines which converge on Vienna (see Fig. 49, p. 215) send their eastern traffic from that great centre through Budapest to Belgrad, and similarly all the traffic from the Balkan Peninsula and the Nearer East must pass through Belgrad on its way to Vienna, whence it can be distributed throughout western Europe. Although so much

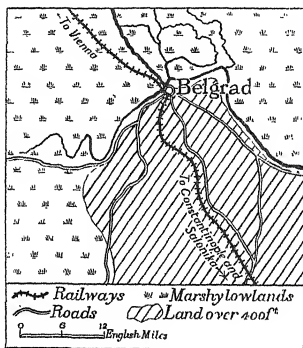


Fig. 16. Belgrad, surrounded on three sides by marshes, and commanding the main entrance into the Balkan countries.

trade goes through Belgrad, the town is not a particularly rich one, and has few local industries.

Nish (pop. 37,000) is at the place where the main route forks, and in time of war is an important strategic point. Apart from that its importance is small.

Uskub<sup>1</sup> (pop. 72,000) stands in the valley of the Vardar just where the gorge opens out to form a fertile basin, and where it is joined by the wide and fertile valley of the River Ibar.

<sup>1</sup> Or, Skoplie.

Being on the main north-south route, and at the juncture of two fertile basins, it is an important trading and strategic centre.

Monastir<sup>1</sup> (pop. 39,000) is on the largest and richest of the alluvial basins, at a place where the main road to Salonica is joined by three local highways which make their way to it

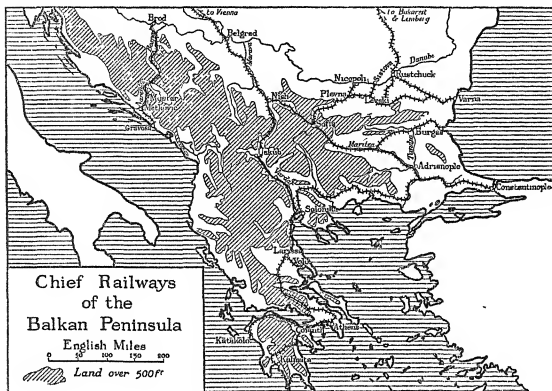


Fig. 17.

across the intervening hills by running up one little stream-valley to the water-parting and down another on the opposite side. A short railway connects the town with Salonica, and so it has a good deal of trade in such local products as grain and hides. In war it is a centre of military operations and encampments.

<sup>1</sup> Formerly Bitolia.

## GREECE

*General Character.* The limestone or Karst mountains of Yugo-Slavia are prolonged into Greece, and make up the greater part of the peninsula. The eastern basins of Larissa, Salonica, the Lower Struma, &c., are similarly a continuation of the forested hills and alluvial basins of the Serbian region, but here, as has been said (p. 57), a mass of land has subsided and formed the Aegean Sea, so that eastern Greece is, as it were, the crumbling and fragmentary edge of a once larger region. The treaty of 1920 added to Greece the alluvial plain of the Lower Maritsa, leaving to Turkey only Constantinople but in 1923 Turkey regained most of this area.

*Climate and Vegetation.* The climate of Greece is distinctly Mediterranean in type, as the following figures show; and the natural vegetation and cultivated crops are those already enumerated as characteristic of this type.

TEMPERATURE (Fahr. Degrees).													
<i>Winter.</i>			<i>Spring.</i>			<i>Summer.</i>			<i>Autumn.</i>			<i>Ann.</i>	
D.	J.	F.	M.	A.	M.	J.	J <sup>r</sup> .	A.	S.	O.	N.		
Athens.	50	47	48	52	59	68	76	81	80	74	66	57	63
Salonica.	45	41	45	50	57	67	74	79	78	72	64	51	60

RAINFALL (inches).													
Athens.	2.52	2.24	1.52	1.48	0.88	0.84	0.44	0.32	0.44	0.56	1.80	3.04	16.08
Salonica.	2.0	1.28	0.88	1.12	1.64	1.76	1.88	0.80	1.04	1.16	1.76	2.0	17.32

The lowland between Adrianople and Constantinople is the only part where climatic conditions are unfavourable to agriculture, for here the drought is so severe that a bare and treeless expanse is found, dotted with patches of oak-scrub and swept by dust-storms.

*Minerals.* Marble is the only valuable mineral. This is extensively quarried and used for building. A good deal of iron and lead is also mined.

## Natural Regions

- (a) The Limestone Mountains.
- (b) The Eastern Basins.
- (c) The Lower Maritsa Basin.

*The Limestone Mountains. General Character.* The Grecian Alps resemble the highlands of Dalmatia, except that the fertile depressions and *polyen* are rare in Greece. The limestone hills are bare and infertile, too dry to support the ordinary Mediterranean trees and crops. A small breed of mountain cattle, and large herds of sheep and goats are kept.

Besides the cattle and sheep rearing, there is only one important industry in this region, viz. the cultivation of currants. The currant area is limited, extending only along the southern shore of the Gulf of Corinth and the western coast of the peninsula of Peloponnese or Morea. Nevertheless, currants are the chief export of Greece, and the production is so large that it has at times been restricted by law so as to prevent overstocking the world market. Patras (pop. 61,000) is the port through which the currant trade goes.

*Routes and Settlements.* The population of the Grecian mountain region is scattered in small pastoral villages among the hills and little fishing settlements on the rocky and broken coast. Roads are few and very bad. The only important railway is that which serves the currant-growing area. It creeps along the narrow coastal plain of the west and north coast of Morea, and links the little settlements with the ports of Patras and Corinth, and with Athens, where it joins the main European line from Salonica.

Corinth at the present day is a squalid little modern settlement of some 4,000 people. It is  $3\frac{1}{2}$  miles from the famous old Greek town which was completely destroyed by an earthquake in 1858. Old Corinth was a large port, standing at the head of two natural gulfs, and the Greeks contrived a kind of tramway by which the little ships of those days could be hauled across the isthmus from one harbour to the other.



*Basins of Eastern Greece. General Character.* The basins of the Lower Struma and Vardar,<sup>1</sup> the plain of Thessaly or Larissa, and the plains of Marathon surrounding Athens, are, as has been said, fragments of the land which foundered and formed the Aegean Sea. The fertile lowlands are isolated by mountain masses such as Olympus, or by small ridges, and this isolation gave rise to the numerous little separate states into which ancient Greece was divided. Many streams rush down the sides of the hills into the plains, providing both water-power and an easy means of irrigation in the long dry summers.

The inland basins of Macedonia have not very easy access to the sea, but, lying as they do along the main route from Central Europe to the Aegean, they have always been peculiarly open to hostile invasion. Hence Macedonia has been so often a battlefield that it has never had a chance to develop its really excellent natural resources. As a wheat-growing and cattle-raising district it has large possibilities, but as yet they are scantily utilized. The Macedonian peasant in time of war finds it easier to flee into the hills than to escape by sea, and hence he has never become a sailor or trader. His villages do not lie on the aforesaid great highway, but are hidden away for safety in the little side valleys among the hills. Thessaly and the other basins have much easier access to the sea than Macedonia.

The Grecian peninsula is so broken and indented that the inhabitants have always been primarily sailors and traders, and when driven out by invaders or by economic pressure they have escaped by sea. The fact that Greece produces the luxuries rather than the necessities of life has rendered her all the more dependent on commerce. She cannot feed herself, and must exchange her wine and fruits for necessities of life. Nations of seafarers and traders mix freely with other peoples, and so develop early in art and learning, as the Greeks did.

<sup>1</sup> The ancient state of Macedonia. The name is still used for convenience.

*Towns.* Salonica (pop. 236,000) is inevitably one of the chief ports of Southern Europe. It stands on a fine large bay, and has a harbour which is good so long as it is kept well dredged of Vardar silt. Round it lie the fertile alluvial plains of the Vardar estuary, and close behind is a hill easily fortified. Commanding the route to Vienna, it has a very large trade. Some three or four million pounds worth of merchandize pass through it annually, the chief imports being textiles and iron goods, the exports grain, animal products, and tobacco. Macedonia has a soil and climate peculiarly adapted for producing the best tobacco leaf, and this commodity is the most valuable of its exports.

Athens (pop. 452,000), like so many of the famous towns of antiquity, is built where little hills rise from a lowland bordering on navigable water.<sup>1</sup> As has been said and quoted so often, the ancient peoples required for a town-site hills for fortifications and for their temples, level spaces for their markets, and water for their ships. These are, of course, still some of the main requisites for town-sites, but on so different a scale that in many cases the old towns cannot adapt themselves to modern conditions. Athens is not one of these.

The beginning of the Hellenic town<sup>2</sup> was a small fortified settlement on the hill of the Acropolis. The population soon spread on to the plain, and in the classic period of Greece the hill was occupied by public buildings such as the Parthenon, the Erechtheum, and the beautiful little temple of Athena Nike.

The Attic plain behind the city used to grow plenty of grain to feed the people, and on the hill-sides olives, figs, and grapes flourished. About five miles away the fortified harbour of the Piræus grew up. Here a promontory rises conveniently for defence, and three natural harbours provide ample space for shipping. The Piræus deals with 53 per cent. of the imports of Greece, but, owing to its limited hinterland, it has

<sup>1</sup> Cf. Paris, Rome.

<sup>2</sup> The site was inhabited in prehistoric times.

little export trade. Athens and the Piræus are connected by a main railway line with Salonica, and so with Central Europe.

Like modern Rome, Athens of to-day is primarily an art centre and an international seat of learning, for its art treasures and museums are of far more value to the world at large than any commercial advantages could ever be.

*The Lower Maritsa Basin. General Character.* The lowland between Constantinople and Adrianople is a dry infertile tract where herds of cattle and troops of horses eke out a poor living on the scanty pastures, and where human settlements are few and scattered. That there should exist a barren and sparsely-peopled land behind Constantinople, has helped to cut that city off from Europe, and to attach it rather to the Anatolian coast whence it can most easily draw food supplies for its great population.

The river valleys are fertile and cultivated, because they are irrigable, and they yield wheat, maize, sesamum, tobacco, and wine, i. e. the typical Mediterranean produce. The Maritsa valley is largely devoted to the production of raw silk, which is manufactured at Adrianople.

*Routes and Towns.* The real importance of this basin lies in its command of the Vienna-Constantinople route. (See Fig. 17.) The winding passage, whose opening Belgrad guards, runs southward up the Morava valley to Nish, and from there branches, one route leading down the Vardar to Salonica, and the other south-east in a narrow *couloir* between the closely jammed Balkans and Rhodope Highlands to Sofia. Thence it drops down on to the Maritsa lowland, follows the main channel of the river to Adrianople, and then, where the river makes its characteristic elbow, leaves the main stream and follows up a little tributary and on to Constantinople, whence Asia Minor and the Near East lie open. On these routes the large and important towns of the peninsula stand.

Adrianople (pop. 34,000) is a gap town situated at the junction of the Maritsa and Tunja rivers, which unite as they emerge from the hills. For many years it was a Turkish

frontier fortress guarding the roads to Constantinople, becoming a Greek possession in 1920, but being returned in 1923.

Constantinople (pop. 673,000) is a town whose unique position has made it since its founding—probably in the seventh century, B. C.—a centre of trade, of political, religious, and racial strife, and of all manner of historical romance. It has almost every natural advantage that a town could possess.

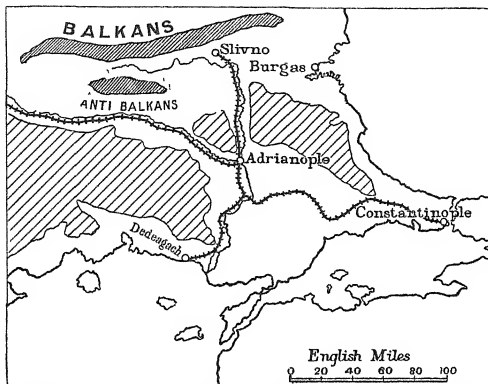


Fig. 18. Adrianople, guarding the routes that converge on Constantinople.

It is built on an easily fortified promontory, has a magnificent natural harbour, and controls both the land- and sea-routes between Europe and the East. In its early days as Byzantium, it had command of the Euxine (Black Sea) grain trade, and was famous for its fishing. To add to all its other advantages it has a mild and healthy climate and an excellent water-supply.

In mediaeval and modern European history, the possession of Constantinople has been for Russia, for the Central Powers, and

for Turkey the great ambition for the attainment of which no sacrifice of life and wealth was too great. Latterly Constantinople has lost importance through the abolition of the Caliphate and the transference of Turkish government to Angora.

Until the nineteenth century Constantinople was primarily an eastern city, but it is now to some extent losing its oriental character and becoming more European. The trade which normally passes through it in a year is worth some ten million pounds sterling, and of this about 40 per cent. is British. Its chief export is cereals, but its biggest item of trade is in imported textiles, cotton, woollen, and silk, &c. These articles of trade are what would be expected, as it is the port for Asia Minor, the Balkan Peninsula, and southern Russia, all of which are agricultural regions where little manufacturing is done.

### THE GREEK ISLANDS

*Crete.* The island of Crete or Candia stands in an important position across the mouth of the Aegean Sea. It consists of limestone mountains, which descend abruptly to an inaccessible coast on the south, but gradually to a well-indented seaboard on the north. The highest peak is Mount Ida (8,070 feet), renowned in Greek mythology.

The climate is warm and sufficiently wet, so that the limestone uplands support large herds, and among the hills and valleys of the north coast vines, olives, and cereals grow abundantly.

The population lives by agriculture, and wine and oil are produced. The chief centres of population are along the north coast.

In classical times, and even earlier, Crete was a rich and populous island and a great sea-power, but it declined through the Middle Ages, and fell into ruin under Turkish rule.

*The Ionian Islands.* This group, which lies off the west coast of Greece, includes Corfu, Leukas, Cephalonia, Ithaca, Zante and Cythera. The islands are small and mountainous,

but their little coastal plains are very fruitful, producing a large amount of currants, wine, and fruit. At the present time, as in the days of ancient Greece, the island ports have many merchant ships.

*The Aegean Islands.* These are, for the most part barren, but the Cyclades produce a good deal of wine, and have a port, Syra, which has a population of 21,000, and has considerable trade.

### ASIA MINOR

*General Character.* The Anatolian Peninsula, as has been said, is an easterly continuation of the old and resistant block

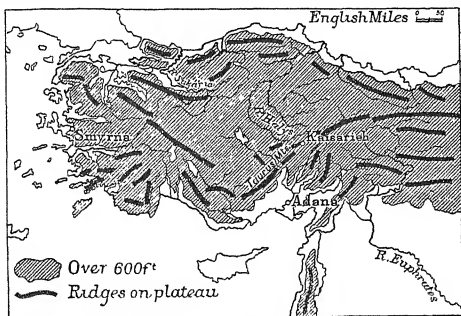


Fig. 19. The trend of the Anatolian ridges.

which forms the Central Highlands of the Balkans. It consists of an undulating plateau rising from about 2,000 feet in the west to 4,000 feet in the eastern or Armenian highlands. It is hedged in along the north and south coasts by the Pontic Alps and the Taurus Mountains, and from the plateau rise many ridges (see Fig. 19). The general trend of all these ridges is from east to west, and in the days when the Black Sea coasts and the Levant (i.e. the coastlands of the eastern

Mediterranean), were great commercial regions they acted as a serious economic barrier between the two. The western coast has no mountain barrier, for here the mountains are at right angles to the coast-line and form long promontories jutting into the sea and alternating with deep inlets where the rivers empty. The river valleys make practicable routes up on to the plateau, so that communication from west to east has always been relatively easy.

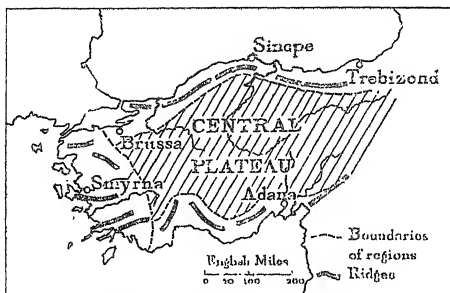


Fig. 20. Natural Regions of Anatolia.

*Climate.* Like all mountainous countries the peninsula has many climates. (1) The western coastal region is typically Mediterranean in climate and products. (2) The north coast has abundant rainfall all the year round, with a winter maximum, and is exposed to fierce north winds from Russia. (3) The south coast is warm and sheltered but has a rather scanty rainfall owing to the hills behind it, which shelter it from the rain-bearing winds. (4) Much of the plateau top has a very severe type of steppe climate and a scanty steppe vegetation. These varieties of relief, climate, and vegetation divide the country into four natural regions:

- (1) The Western Coastal Region.

- (2) The Northern Coastal Region.
- (3) The Southern Coastal Region.
- (4) The Central Plateau.

## The Western Coastal Region

*General Character.* Although in the early centuries of the Christian era the whole of Asia Minor was a fertile, well-cultivated and populous country, at the present day it is chiefly in the mild and fruitful valleys of the indented western coast that one finds any approximation to modern European standards of development and civilization.

This region consists of a series of river gorges widening to small alluvial or deltaic plains, and cut off from each other by rugged mountain masses jutting far out to sea. Covered with rich river-borne soil, watered in winter by plentiful rains, and at any time easily irrigated, sheltered by high mountains from every wind except the mild rain-bearing westerlies, these little basins are gardens of fertility, secluded from each other and from the mainland, but with doors wide open to European trade.

The following figures illustrate the climatic type of the region:

RAINFALL (inches).													
<i>Winter.</i>				<i>Spring.</i>			<i>Summer.</i>			<i>Autumn.</i>			<i>Ann.</i>
D.	J.	F.	M.	A.	M.	J.	J.	A.	S.	O.	N.		
Smyrna.	5.24	4.40	3.36	3.24	1.72	1.28	0.56	0.12	0.08	0.72	1.76	3.64	26.12
TEMPERATURE (Fahr. Degrees).													
Smyrna.	49	46	48	53	59	68	75	80	79	72	66	56	63

Fruit-growing is naturally the chief industry under such conditions, for windless and sunny slopes are always adapted for orchards, while cereals require larger tracts and less sloping ground. Figs and olives are the staple products. In the north-west, all round the city of Brusa, is an important industry in raw silk, of which that town is the centre.



This region is far more closely connected with Greece, which it so much resembles in climate and products, than with the bleak Anatolian plateau behind. More than half of the large population of Smyrna is Greek.

*Towns and Routes.* The population as a whole lives in little villages built along the valley slopes which are cultivated

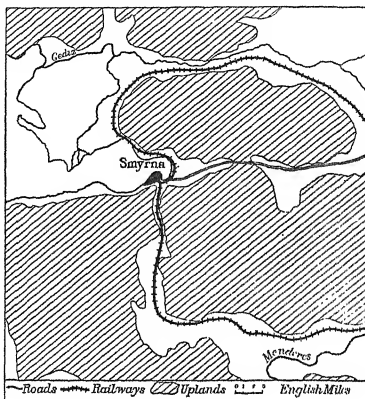


Fig. 21. Position of Smyrna.

*Note.* The valleys which converge directly on Smyrna have at the present day no rivers, hence no silt comes down to obstruct the harbour.

to a great height. There are scarcely any large towns, and very few ports of any size. Most of the bays are silted up with alluvium brought down by the rushing rivers, so that places like Ephesus and Miletus, once flourishing ports, are now mere villages.

Smyrna (pop. 153,000)<sup>1</sup> is exceptional in its position, for it

<sup>1</sup> Populations of towns in Asia Minor are not known exactly. The figures given in this section are all approximate.

lies at the head of a deep and sheltered bay, on a low promontory between the mouths of the rivers Gediz and Menderes,<sup>1</sup> so that it gets the trade of these, the two chief valley routes to the interior, but avoids the river silt. The export trade of this great port is in figs, tobacco, carpets, silk, and raisins.

The route of the Gediz River gorge is followed by the rail-

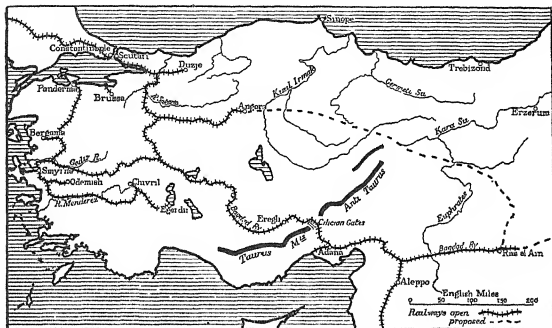


Fig. 22. Railways of Anatolia.

way which crosses the plateau, gets through the Taurus ridge near the famous Cilician Gate, and so down off the plateau on to the Plain of Adana to the town of Tarsus. Thence it goes on towards Mosul, and Bagdad. But the completion of the Bagdad railway is not likely to increase the importance of Smyrna, for the railway from Scutari on the Bosphorus, coming up the gorge of the Sakaria river, joins this line on the plateau top, and so makes an almost continuous overland route from Vienna by Constantinople and Scutari to

<sup>1</sup> The classic Meander.

the east, while the Smyrna route would necessitate a sea voyage from Greece.

### The Northern Coastal Region

*General Character.* The relief of the northern coastal region is in marked contrast to that of the western, for the simple but all-important reason that here the mountain ridges lie parallel to the coast and make a series of walls one behind the other, like gigantic earth-works, cutting off the narrow coastal plain from the interior (Fig. 20). The rivers, of which the Kizil Irmak<sup>1</sup> and the Sakaria are the largest, flow first from west to east between the ridges, and then, turning northwards, cut their way to the sea through gorges in the mountains. These great torrents carry down loads of débris, and have built out a whole series of deltas into the tideless land-locked Black Sea, which make a narrow and irregular coastal plain. This coastal plain is exceedingly fertile, but is isolated by the mountains behind it and by the absence of good harbours, the two characteristic drawbacks of this type of coast.

*Climate.* The rainfall of this region is fairly abundant all the year round, though, as will be seen from the following figures, there is the characteristic Mediterranean distribution, with its winter maximum and summer minimum. The winters are mild and the summers hot, but the frequency of cold north winds from Russia makes the temperature vary greatly from day to day.

TEMPERATURE (Fahr. Degrees).													
<i>Winter.</i>			<i>Spring.</i>			<i>Summer.</i>			<i>Autumn.</i>			<i>Ann.</i>	
D.	J.	F.	M.	A.	M.	J.	J <sup>v</sup> .	A.	S.	O.	N.		
Trebizond.	48	43	46	48	53	61	68	74	74	69	64	56	58
RAINFALL (inches).													
Trebizond.	4.96	3.92	1.92	2.88	2.80	2.00	2.68	1.76	2.36	3.08	3.40	4.24	35.00

<sup>1</sup> Kizil = red; Irmak = river.

*Agriculture.* The hill-sides are densely wooded with deciduous forests and Mediterranean evergreens. The lowlands are cultivated and produce wheat, maize, but above all tobacco, for which last the town of Samsun is the chief market. From Samsun a good high road runs up the Yeshil Valley to the plateau, making the town a trade centre of some importance.

*Towns and Routes.* The people live in villages and little towns scattered along the coastal plain, but owing to the exposure of the coast to storms and the absence of harbours, they have very little sea traffic. Sinope (pop. 32,000) is the only safe roadstead between the Bosphorus and Batum, but as it has no practicable route behind it, its trade is very small. Trebizond (pop. 60,000) is not even a safe roadstead, but is far more important than Sinope, because behind it is one of the very few practicable routes inland to the old centre of Erzerum and onward across the Armenian plateau.

## The Southern Coastal Region

*General Character.* The configuration here is much the same as that of the Pontic coast, parallel ridges cutting off deltaic plains from the interior. The differences are (1) that the plains of Pamphylia and Cilicia are far larger than any on the north coast, (2) that the mountains cut these plains off from both the cold and the rain brought to the Pontic coast by the north winds, so that, as is shown by the following figures, the climate is very warm but too dry.

### TEMPERATURE (Fahr. Degrees).

	<i>Winter.</i>			<i>Spring.</i>			<i>Summer.</i>			<i>Autumn.</i>			<i>Ann.</i>
	D.	J.	F.	M.	A.	M.	J.	J <sup>r</sup> .	A.	S.	O.	N.	
Adana.	51	46	49	56	64	71	79	82	77	74	71	59	62

### RAINFALL (inches).

Adana.	3.1	4.1	4.8	3.5	1.7	2.1	0.9	0.1	0.0	0.2	0.8	3.6	24.9 <sup>1</sup>
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<sup>1</sup> It should always be realized that what is ample rainfall in cloudy cool temperate regions is very meagre under the southern sun.

*Vegetation and Occupations.* In New Testament times Pamphylia, and Cilicia with its great town of Tarsus,<sup>1</sup> were thickly populated areas, centres of trade and of learning, and abundantly fertile owing to careful irrigation. But Turkish rule, here as elsewhere, has caused irrigation works to fall into ruin, and the region is at the present day of little importance.

The dry mountain slopes are thinly forested. The high valleys are watered by streams from the melting snows of the mountain tops, and make good summer pasture for the herds driven up from the unhealthy lowlands by their semi-nomadic owners. The plains are quasi-tropical in their products, rice, cotton, millet, tobacco, and maize being typical crops.

*Towns and Routes.* Adana (pop. 72,000) in the midst of the Cilician plain, may become a centre of considerable importance, as it commands the Cilician Gates through which the Bagdad railway has to pass on its way to Mesopotamia.

## The Central Plateau

*General Character.* The Anatolian plateau, as has been said, rises from an average height of 2,000 feet in the west to an average of over 4,000 feet in the Armenian or eastern end. Its central part has a fairly even surface, but along its margins run the many parallel ridges already spoken of. The water-parting is to the south and south-east and is formed mainly by the Taurus and Anti-Taurus ridges.

*Climate.* In climate and vegetation this upland contrasts markedly with the coastal regions, for instead of the Mediterranean we find the steppe type. The relatively low Pontic ridges do not suffice to protect it from the fierce north winds of Russia, and in the winter snow lies from two to four months continuously. The summers are intensely hot and very dry. The winter and the short spring have heavy rain, but a long drought then ensues.

<sup>1</sup> Close to the modern Adana.

TEMPERATURE (Fahr. Degrees).													
Winter.			Spring.			Summer.			Autumn.			Ann.	
D.	J.	F.	M.	A.	M.	J.	J.	A.	S.	O.	N.		
Kharput.	28	22	29	37	50	59	68	77	75	68	57	42	51
RAINFALL (inches).													
Kharput.	4.84	2.60	4.12	6.08	2.32	1.84	0.92	0	0	0.16	2.60	0.96	26.44

*Vegetation and Occupation.* The natural vegetation of the plateau is the coarse grass of steppe regions. The cold winds and long drought preclude tree growth. Some of the land is

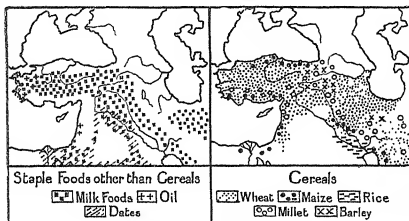


Fig. 23. Products of Anatolia.

so poor as to be uncultivable, and in the south-central part is a great salt desert. The sheltered valleys and the land round the settlements have orchards, gardens, and grain fields, and in bygone times there was a considerable agricultural population. But since the Turkish rule the people have either left the region or reverted to a nomadic life. Cattle and sheep rearing are by far the chief source of livelihood and the people live chiefly on milk-products (Fig. 23). There has been a recent revival of irrigation in some parts of the plateau, but it is not yet extensive enough to have altered the face of the country.

The two chief industries of the plateau are the rearing of the Angora goat and the making of 'Turkey' carpets and rugs from mohair and the wool of the local sheep.

*Towns.* Angora (pop. 74,000) is the centre of these industries and is connected by rail with Scutari, the line following the gorge of the Sakaria River and one of its tributaries.

Erzerum (pop. 78,000), considerably the largest town of the plateau, owes its importance entirely to its position as a route-centre. Caravan routes from Trebizond and from all the chief

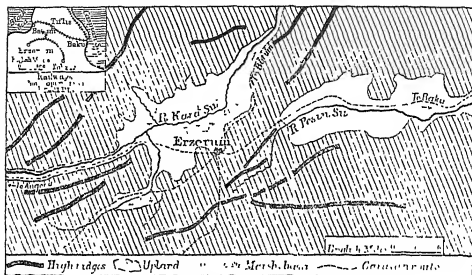


Fig. 24. The fortress and trade centre of Erzerum.

*Note.* Notice the position, protected on three sides by heights, and by marshes on the fourth, and commanding numerous routes in a difficult country.

settlements to the west and east converge on it, so that it is both a fortress and a centre of trade.

## Cyprus

The island of Cyprus consists of two mountain ridges divided by a fertile valley or plain. On to this plain has been washed down rich soil from the northern ridge which is of limestone, and from the southern which is volcanic. The whole island suffers greatly from lack of rain, and for this reason much of it is barren. In bygone centuries its mountains were famous for their forests, and these, by conserving the scanty rainfall, gave a fairly continuous supply of water to the little rivers, and thus irrigation in the lowlands was always

possible. But the forests have been destroyed, and the streams now run dry in the summer, so that the rich soil of the central plain bears no trees and for the most part no crops but grass, on which considerable herds of cattle are grazed. Where the land is cultivated, olives and vines flourish. Cyprus is administered by Britain.

## SYRIA

*Introduction.* The name Syria is applied to a somewhat ill-defined piece of country extending from Asia Minor to the Sinai Peninsula, and inland about 150 miles. Its area approximates to that of England and Wales.

The Palestine of New Testament days forms what is really a very small portion of Syria. 'Solomon in all his glory' reigned over a kingdom about the size of Yorkshire; 'from Dan to Beersheba', the Old Testament phrase implying a very great distance, is about as far as from London to Birmingham; from Jerusalem to Samaria is about 35 miles, and the man who 'went down from Jerusalem to Jericho', although he made a difficult and perilous descent by a rough mountain road, traversed a distance of not much over 14 miles as the crow flies. Nevertheless, since the country of Palestine is of far more interest to the civilized world than is all the rest of Syria, it is proposed here to treat Syria as a whole very briefly, and Palestine in more detail.

*General Character.* Syria consists of a coastal plain, very narrow in the north but widening south of Mt. Carmel to 15 or 20 miles. Behind this rises a wide limestone plateau from 2,000 to 4,000 feet in height, cut lengthwise into two pieces by the extraordinary rift-valley of the Jordan, generally known as the Ghor. The western strip of plateau is cut in two crosswise by the Plain of Esdraelon or Megiddo, formed by the basin of the River Kishon. This plain, as will be seen presently, has always been the strategic centre of Syria.

*Climate.* The climate varies greatly in different parts, but is on the whole of the Mediterranean type. The winters are



mild or warm except on the heights, the summers exceedingly hot. The rainfall is markedly seasonal, abundant in winter and practically nil in summer.

## TEMPERATURE (Fahr. Degrees).

	<i>Winter.</i>			<i>Spring.</i>			<i>Summer.</i>			<i>Autumn.</i>			
	D.	J.	F.	M.	A.	M.	J.	J.	A.	S.	O.	N.	<i>Ann.</i>
Beirut.	60	56	57	60	64	70	76	80	81	79	75	66	69

## RAINFALL (inches).

Beirut.	7.76	7.60	6.36	3.96	2.12	0.60	0.24	0.0	0.0	1.44	1.92	5.32	36.28
---------	------	------	------	------	------	------	------	-----	-----	------	------	------	-------

*Vegetation.* The soil of the coastal plain has come from the Nile basin, carried across from the Nile estuary and deposited along the foot of the limestone plateau. It is therefore fertile and cultivable, and in former days the plain was well forested. The soil of the Jordan rift is also very fertile. The plateau is a barren and treeless steppe of porous limestone cultivable only in spots, covered with grass in the spring. East of about longitude  $36^{\circ} 30'$  desert conditions set in.

*Products.* The characteristic products of the country are wheat, olives and olive-oil, oranges and lemons on the lowlands, and cattle and sheep, yielding wool and skins, on the plateau. In the region behind Beirut the production of raw silk is important.

*Routes.* The importance of Syria in the world's history has risen to a large extent from the fact that it was the high road not only between Asia and Africa, but also between Europe and the East.

In Old Testament times the two great vortices of civilization were the Lower Nile basin, i. e. Egypt, and the Tigris-Euphrates basin. Of Egypt it is not necessary to speak here. But it is not always realized that Mesopotamia has to a great extent the same potentialities of development as Egypt. It is a large alluvial lowland, surrounded on all sides by desert and semi-desert, intensely hot, and with an annual rainfall of under 10 inches. It is drained by two great rivers, and is so low that

large tracts of it are marshy. It is therefore a region which, when drained and irrigated, will support a very dense population. In Old Testament times, when it was the site of the two empires of Babylonia and Assyria, the whole country was elaborately canalized and was therefore very productive. The fact that to-day it is a thinly peopled and inaccessible waste is owing to the complete decay of the irrigation systems. Since the British occupation, irrigation has been revived and crops greatly increased, but the small population makes the labour problem difficult.

The ancient civilization of Egypt was divided from Mesopotamia by the practically impassable Arabian peninsula. For military purposes the barrier could be circumvented only by travelling along the coastal plain of Palestine to Mount Carmel, thence across the plain of Esdraelon and the Hauran Plateau to Damascus, and from there making a dash across the narrowest part of the desert to the Euphrates. This route from the Euphrates to the Nile, now used by motor caravans, is probably one of the oldest roads in the world.

In somewhat later times, when Mesopotamia had decayed and Greece and Rome were the centres of civilization, it was still along the coastal plain of Syria that invading armies passed into Egypt or out of it.

At the present day a railway running along the north coast of the Sinai peninsula connects Alexandria and Cairo with Jerusalem.

A famous road which does not follow the coastal plain is the Mohammedan pilgrim road to Medina and Mecca, now followed by a railway as far as Medina. The railway starts from Damascus, a cross-country line bringing the overseas pilgrims in from Beirut to that town, and strikes due south along the edge of the desert to Medina, whence the journey to Mecca has to be made by road.

*Phoenicia.* Before going on to consider the natural divisions of Palestine, a word should perhaps be said about the ancient kingdom of Phoenicia.

The Phoenicians<sup>1</sup> occupied the narrow strip of coastal plain north of Mount Carmel and for many centuries before the Christian era were one of the great trading peoples of the Mediterranean. Their land was never very productive, but their ports of Tyre and Sidon were good harbours in those days, and the forests of Lebanon gave them timber for ships. Thus they early became fishermen, traders, and colonists. Two kinds of shell-fish obtained along the coast yielded the famous Tyrian purple dye, and hence large textile industries sprang up in Phoenicia. Their trade became large because they carried the merchandize of other countries, and their colonies, one of the chief of which was at Carthage, brought them much wealth. The Old Testament has many references to their power and luxury and splendour (e.g. Ezekiel xxvii, Nehemiah xiii. 16).

## PALESTINE

*Introduction.* The fact that the country of Palestine has always been the home of a number of little peoples continually either at feud or at war with each other is not an historical accident, if such a thing exists, but an almost inevitable result of geographical factors. There is probably no small country in the world which is so cut up into widely different natural regions as Palestine. Even in the briefest possible survey it is necessary to distinguish between (1) the Maritime Plain, (2) the Judæan Plateau, (3) the hill-country of Samaria, (4) Galilee, (5) the Jordan rift or the Ghor, (6) the country beyond Jordan.

## The Maritime Plain

*General Character.* The Maritime Plain, only 2 or 3 miles broad at the Carmel peninsula, widens gradually to a breadth of 20 or 30 miles in the south. The whole plain has been gradually built out from the base of the plateau by rich Nile

<sup>1</sup> In the Old Testament they are sometimes called the Canaanites, and more often the Sidonians.

mud brought by a swift current, and the force of this current keeps the shifting sandy coast-line straight and unbroken. The difficulties of making a landing on such a coast are great,

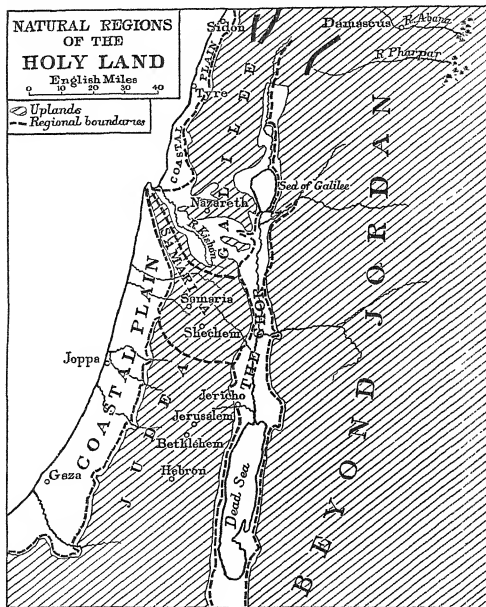


Fig. 25.

for there is no shelter, and the water is too shallow for ships to approach close. Passengers and produce are sent ashore in small surf boats.

The sea-line is flanked by sand-dunes covered with coarse grass, and behind these stretches the rich alluvial plain, abundantly watered by the brooks which gush out from the foot of the limestone escarpment on the east.

*Climate.* The climate of the plain is warm in the winter, with a fair amount of rain, and in summer very hot and rainless.

TEMPERATURE (Fahr. Degrees).													
	<i>Winter.</i>			<i>Spring.</i>			<i>Summer.</i>			<i>Autumn.</i>			
	D.	J.	F.	M.	A.	M.	J.	J <sup>r</sup> .	A.	S.	O.	N.	<i>Ann.</i>
Gaza.	57	53	56	60	65	71	75	79	80	77	74	65	67
RAINFALL (inches).													
Gaza.	4.00	3.20	0.54	0.04	0	0	0.04	0.32	0.28	1.48	2.00	4.00	16.80

*Vegetation and Products.* Although the annual rainfall is low, the region is well watered by brooks, and wells can be sunk anywhere. In former centuries the plain was densely wooded, but very little forest remains. The chief crops are wheat, olive, oranges and lemons, and grapes, and the production of olive-oil is the main industry. The region has an aspect of quiet rich luxuriant beauty, but, as before said, it has always suffered from being one of the great war-paths of the world.

*Towns.* In the days of the Philistines it was also a great commercial highway, and it is noteworthy that most of the chief Philistine towns (e.g. Gaza, Ashdod) are not on the coast, which is impracticable, but on the north to south highway. Jaffa<sup>1</sup> (pop. 47,000) is a mere roadstead where ships cannot come in. It has a considerable trade in exporting oranges and lemons.

## The Plateau of Judaea

*General Character.* Judaea is the name given to the southern end of the strip of limestone plateau which lies between the Maritime Plain and the Jordan Rift. It is a peculiarly inaccessible region, for southward it merges into the Arabian desert,

<sup>1</sup> Joppa.

the approaches to it from the coastal plain are rough and difficult limestone gorges, and the ascent from the Ghor on the east is so precipitous that there are only three routes, all of which are mountain tracks rather than roads. When the difficulties of approach have been surmounted, the traveller sees a stretch of undulating barren limestone moorland covered with coarse grass and scattered with boulders. Even where cultivable, the soil is thin and stony. The porous limestone absorbs all water, so that springs and wells are very rare. Where the plateau is broken by depressions, there are small areas of fertility, as near Bethany and Bethlehem and more especially round Hebron.

*Climate.* As the plateau is between 2,000 and 3,000 feet high, the heat is not excessive, but since no rain falls between May and August the summer drought is very great and the land is relatively treeless, and hence shadeless and windswept. Hence the Judean poet says 'a man shall be as an hiding place from the wind, . . . as rivers of water in a dry place, as the shadow of a great rock in a weary land' (Isaiah xxxii). The rainfall of about 25 inches occurs throughout the colder months. The beginning of the rainy season in late October with heavy showers which soften the parched ground for ploughing, and the final rain-storms in March and April just before harvest and summer drought, are 'the former and latter rains' of Scripture, and it is on these that the Syrian farmer depends more than on the abundant but less needed rains of December and January.

*Occupations.* In such a country the keeping of flocks and herds is of necessity the chief industry. The shepherd's life is the typical one.<sup>1</sup> The preoccupations of his daily existence are the scarcity of water, pasture, and shade. When he dreams of Utopia, he pictures it as 'a land flowing with milk and honey', the two staple foods which he knows best, and yet of which he rarely has enough. The lonely austerity of his life makes him a thinker and a lofty idealist; but its poverty tends

<sup>1</sup> See pp. 21-3.

to render him hard and grasping, and its seclusion, narrow and bigoted.

*Settlement.* Settlements on the plateau are not scattered, but concentrated into small towns and large villages. This is partly for safety from marauders, and partly from scarcity of water on the limestone. The houses and walls are built of limestone, and the dome-shaped roofs, so familiar in pictures of Palestine, are due to the fact that the roofs also must be of stone, wood being very scarce. A roof of stone must be arched or it would collapse. Caves are always numerous in a limestone region, and in Judaea they are used as cool cellars, and also as stables. Hence the stable at Bethlehem is usually believed to have been a cave.

*Towns and Routes.* There are no great high roads across Judaea, and comparatively few roads practicable at all for wheeled traffic. The absence of roads, of rivers, and of all forms of natural wealth results in the complete absence of town sites. The only good-sized town in Judaea is Jerusalem (pop. 63,000). Surrounded by hills and difficult of approach on all sides, it originated as a fortress, and grew to importance as the centre of a religion, one of whose chief tenets was the exclusion of the outside world. The relatively large population of modern Jerusalem is due to its religious history and associations, for it has many convents, monasteries, missions, and similar institutions.

## Samaria

*General Character.* The northern end of the limestone plateau of Judaea constitutes the ancient province of Samaria,<sup>1</sup> but although part of the same upland, the region is a very different one. Here the plateau is broken up into ridges and wide valleys, and whereas in Judaea the fertile valleys were minor incidents of the bleak upland, here they are so numerous and extensive as to be the outstanding features. They are

<sup>1</sup> The name is, of course, obsolete. The modern Turkish province was called El Belka.

well watered and productive, so that although the climate in terms of temperature and rainfall is similar to that of Judaea, the aspect of the land is different. There is much arable land on which wheat is grown, and the other products are the usual Mediterranean ones—olives, grapes, oranges, figs, &c.

Being an open and fertile province, Samaria has had a different history from Judaea. It has been overrun with ease by all the various invading peoples, so that its customs and its religion were much influenced by those of the surrounding nations.

At the present day Samaria has no important town. In Biblical times its chief settlements were fortresses, as they necessarily would be in a region so subject to invasion and so fatally easy of access. Thus the town of Samaria was built on a small isolated hill about 300 feet high in the midst of a low-land opening toward the sea, and was deliberately built as a fortress. Since the neighbourhood of a strong fortress was a relatively safe one, the town soon became populous.

### Galilee<sup>1</sup>

*General Character.* The province of Galilee included (1) the northern end of the Jordan Rift, (2) the great plain of Esdraelon, (3) a region of low irregular ridges and valleys just west of the Sea of Galilee, known as Lower Galilee, and (4) the high piece of limestone upland just south of Mount Lebanon, known as Upper Galilee. Thus it comprised parts of four different geographical regions.

Certain passages in the New Testament show that the inhabitants of Judaea despised Galilee and the Galileans, as barbarous and uncouth, and many people accordingly have the idea that Jesus Christ grew up in a remote and secluded village among unlettered peasants. But, as Sir George Adam Smith so clearly sets forth in his great book on the Holy Land,<sup>2</sup> such

<sup>1</sup> Like Samaria, this is an obsolete name, but it conveys more to European readers than do the modern province names.

<sup>2</sup> *Historical Geography of the Holy Land*, by G. A. Smith.



was far from being the case, for Galilee was the most fertile, populous, and cosmopolitan province of Palestine, even richer than Samaria. It differs from the rest of the country in two important respects. First, its soil is not in the main the stony and thirsty limestone, but fertile volcanic débris interspersed with recent alluvium. Second, the region is abundantly watered, for though it has the typical Mediterranean rainy and dry seasons, its nearness to the snow-capped heights of Lebanon and Hermon gives it full-flowing streams all the year round. It has a variety of temperature and hence of vegetation. The deep and sheltered Jordan depression is tropical in its oppressive heat; Lower Galilee is a warm temperate region famous in Biblical times for olives, figs, grapes, and corn; and in Upper Galilee the limestone moorlands reappear. The plain of Esdraelon is so low and so flat that the abundant water supply makes it marshy, but when well cared-for it is excellent wheat land.

The Sea of Galilee, being drained by the Jordan, is a fresh-water lake teeming with fish. It has always been subject to sudden and violent storms caused by local atmospheric disturbances due to the great heat in the rift valley and the coolness of the surrounding uplands. In Biblical times the shores of the lake were closely built over with fishing-towns and villages of which Tiberias and Capernaum were the chief, but at the present day the country is relatively wild and deserted.

The whole region of Galilee, in common with all the best parts of the Eastern Mediterranean, is dependent on irrigation for its fruitfulness, and under Turkish rule much of it has relapsed into marsh and grass-land.

*Routes.* This province has always been the great thoroughfare between the coast of Syria and the interior. Armies and caravans utilize the gap in the limestone ridge made by the plain of Esdraelon to get across to Damascus and thence into Mesopotamia. The many roads and tracks across avoid the muddy plain itself and skirt round its edge, but the railway to

Damascus goes from Haifa on the coast straight across the middle of it, down into the rift by the Valley of Jezreel, and up the other side toward Damascus by the deep valley of the Yarmuk, the chief tributary of the Jordan.

### The Ghor

The deep and narrow depression with precipitous sides, at the bottom of which the River Jordan runs is, of course, not a normal river-cut valley but a crack or rift in the earth's surface which was formed in the same geological age as the Nile Valley and the Red Sea.

The deepest part of the depression is that south of the Sea of Galilee, and it is this deep part which is called the Ghor.<sup>1</sup> The whole rift is over 160 miles long, extending northwards between the Lebanons, and south to the end of the Dead Sea, where an elevated tract of limestone serves as a dam to the waters of Jordan. The intense salinity of the Dead Sea, 24-26 per cent. as against 4-6 per cent. in the open ocean, is due to the fact that the lake has no outlet, but loses its water by evaporation only, and thus never gets rid of the salts brought down by Jordan.

The Jordan is a powerful and muddy stream which rushes along in a deeply incised channel, too swift for navigation and too far below the level of the valley floor to be useful for irrigation.

Much of the soil of the Ghor is intensely fertile and in the damp hot-house heat natural vegetation is rankly prolific. A great deal of the land is jungle-covered, and haunted by wild beasts. It would be possible to irrigate this land and make it richly productive by using the many tributary brooks which enter the main stream.

The Ghor was never densely peopled, probably owing to its intolerable climate and its extreme inaccessibility. Jericho, where the valley widens out considerably, commands

<sup>1</sup> Arabic El-Ghôr = the Rift.

the most practicable of the difficult routes up on to the Judæan plateau, and was always the chief city of the region.

### Beyond Jordan

*General Character.* The plateau beyond Jordan is about 2,000–3,000 feet above the level of the rift-valley. It consists of two very different geological formations :—(1) The Hauran, the part north of the Sea of Galilee, is volcanic, and has the usual qualities of volcanic soil, extreme fertility and the consistency which retains moisture. (2) Basan and Gilead, south of the Sea of Galilee, is of limestone similar to the Judæan plateau, and so has a more thirsty soil than the Hauran.

*Climate.* The Mediterranean climate still prevails, but in a modified form. The greater height and greater distance from the sea makes the region colder than western Palestine, and the hot, moist air rising from the Jordan valley precipitates its water-vapour on the heights in the form of heavy mists, rain, and in winter, snow. Hence in summer the drought is nothing like so complete as in the west, and the fact that snow often falls instead of rain in the winter means that the water is stored up instead of sinking into the limestone soil in the south. As a result of all these factors, the plateau beyond Jordan is well watered.

*Economic Resources.* The Hauran has been an exceedingly productive region, because its fine soil retains moisture and is very fertile. It was the granary of Syria, was rich in Mediterranean fruits, and had besides much good pasture.

The southern part (Basan and Gilead) is drier than the Hauran because of its limestone soil, but, for the reasons given above, is far less barren than Judæa. It is, and has always been, the chief pastoral region of Syria. In Judæa the herds are sparse and scattered ; here there are sheep and cattle in countless thousands and of the finest breeds. When it is added that the climate here is ideal and invigorating, and never reaches intolerable extremes, one seems to have described

an earthly paradise. One asks why such a region has never become settled and highly civilized. The answer is simple. It is cut off from the rest of the world on the west by the gigantic 'sunk fence' of the Ghor, and is perfectly open on the east to the marauding tribes of the Arabian desert whom it can never keep really at bay. Hence its progress has always been paralysed by danger, and its rich shepherds have never been able to settle down and take their ease and build great cities.

Damascus (pop. 193,000) is outside the limits of the Holy Land, and was never ruled by the Hebrews, but is the only large settlement in the region beyond Jordan, and as such is an essential part of the region. It stands in an alluvial basin on the River Abana, just beyond the northern edge of the volcanic Hauran. It is said to be the oldest city of the world, and for that reason, if for no other, the geographical details of its site are of interest.

Sir George Adam Smith<sup>1</sup> has a description of Damascus, the beauty of which is indicated by the following brief quotations:—

'This plain' (i.e. the plain on which Damascus stands) 'would be as desert as all the rest of the country were it not for the river Abana. The Abana bursts full born from the heart of Anti-Lebanon, runs a course of ten miles in a narrow gorge, and from the mouth of this flings itself abroad in seven streams. After watering the greater part of the plain, it dies away in a large marsh. . . .

'It is an astonishing site for what is said to be the oldest, and is certainly the most enduring, city of the world. For it is utterly incapable of defence; it is remote from the sea and the great natural lines of commerce. . . . But look east and you understand Damascus. You would as soon think of questioning the site of New York or of Sydney or of San Francisco. Damascus is a great harbour of refuge upon the earliest sea man ever learned to navigate. It is because there is nothing but desert beyond, or immediately behind this site; because

<sup>1</sup> *The Historical Geography of the Holy Land*, p. 641 et seq.

this river, the Abana, instead of wasting her waters on a slight extension of the fringe of fertile Syria, saves them in her narrow gorge till she can fling them well out upon the desert, and there, instead of slowly expending them on the doubtful possibilities of a province, lavishes all her life at once in the creation of a single great city, and straightway dies in face of the desert—it is because of all this that Damascus, so remote and so defenceless, has endured throughout human history and must endure. . . .

‘Standing on the utmost edge of fertility, on the shore of the much-voyaged desert, Damascus is indispensable alike to civilization and to the nomads. Moreover, she is the city of the Mediterranean world, which lies nearest to the Far East, and Islam has made her the western port for Mecca.

‘The plain on which Damascus lies is called the Ghutah. Too high to be marshy, the Ghutah is shot all over by the cool, rapid waters of the Abana, which do an equal service in bringing life and in carrying away corruption. . . . The cultivated ground is extensive, most of it in orchards and plantations, but there are also flower-gardens, parks and corn-fields of considerable size. . . .

‘With the long gardens of Damascus, the paradise of the Arab world, you must take the bazaars of Damascus, in which many other worlds meet the Arab. . . . In the long dusk tunnels, shot by solid shafts of light, all else is beautiful—the old walnut wood, the brown tobacco bales, the carpets, the spotted brown scones in the bakers’ shops, the tawny sweetmeats, the golden Hauran wheat, the piles of green melons, the tables of snow from Hermon, the armour and rich saddle-bags, the human dresses, but especially the human flesh—the pallid townsman, the mahogany fellah, the Druze with mountain blood in his cheeks, the grey Jew, the black and blue-black negroes. Besides Turk and Hebrew, the great racial types are three: the Bedawee Arab, the Greek, and the Kurd. They are the token of how Damascus lies between the Desert, the Levant, . . . and the highlands of Armenia.

‘But even the Bazaars of Damascus fail to exhaust the significance of the city. To gather more of this you must come out upon the three great roads which go forth from her—west, south, and east. The western, or south-western road travels by Galilee to the Levant and the Nile. The southern, which leaves the city by the ‘Gates of God’, takes the pilgrims to Mecca. The eastern is the road to Baghdad.

Egypt, Arabia, Persia—this city of the Khalifs lies in the midst of the three, and the Mediterranean is behind her.’

## EGYPT

*General Character.* Egypt proper consists of the lower part of the Nile basin from Wadi Halfa northwards, the Libyan Desert, the land between the Nile and the Red Sea, and the Sinai Peninsula, and has an area of 350,000 square miles; but cultivated and settled Egypt is merely the lower Nile Valley and delta, and covers only 12,226 square miles. South of Wadi Halfa is the large tract of the Anglo-Egyptian Sudan. In this book cultivated Egypt alone is dealt with, except in so far as the surrounding country has a direct bearing on the development of the smaller tract.

Egypt consists of a low and very flat tableland of white limestone, bounded on the east by the Red Sea Hills which are of old hard rock highly dissected by ravines. Across this limestone plateau the Nile flows, forming a very large delta at its mouth. A little north of Assuan the river flows through a narrow rift valley caused by parallel faulting in the limestone. From here almost to Cairo it is shut in by limestone cliffs of 1000–1500 feet in height, its valley being from one and a half miles to six miles wide.

*The Nile.* Since fertile Egypt is created and sustained by the Nile, and without it could have no existence, an account of that unique river is essential to a geographical description of the country.

The Nile rises in Victoria Nyanza, at a height of 3,900 feet, and is the longest river in the old world. For many years its source and upper course were to explorers as alluring a mystery as in more recent times were the North and South Poles. But the famous African explorer Speke discovered the source in 1858, and a few years later the whole upper course was mapped. Of the river's 3,670 miles of length, 3,100 miles are navigable, although the cataracts interrupt navigation when the water is low.

The nomenclature of the Nile and its tributaries is confusing. The main stream is called the Bahr el-Jebel above the confluence of the Sobat; from there to Khartum it is the White Nile, and below Khartum simply the Nile. The main stream receives one large tributary from Equatorial Africa, the Bahr el-Ghazal, and three much more important ones from the Abyssinian plateau, viz. the Sobat, the Blue Nile (Bahr el-Azrah) and the Atbara. Below the Atbara, for about 1,000 miles, it gets no more tributaries, since it flows through a waterless desert, and as a result its volume diminishes gradually, partly owing to seepage, and partly owing to the vast quantities of water absorbed by irrigation works.

The delta of the Nile is a very large and constantly growing one. It is due to (1) the heavy floods which bring down quantities of silt, (2) the absence of strong tides in the Mediterranean,<sup>1</sup> (3) the gentle slopes of the lower course. The Nile mud is peculiarly fertile, and so the delta is a rich and densely peopled area.

*The Nile Floods.* All human life and occupation in Egypt is regulated by the rise and fall of the Nile waters. From August to January the Nile is high, reaching its greatest volume in September. From January to July the Nile is low, reaching its lowest in July, just before the floods set in again.

The floods are caused by the heavy summer rains in Abyssinia, which fall from June to September and then cease.

The fact that the Nile continues high till the beginning of January, although the rains stop in September, is due to a curious phenomenon. The Sobat and the Blue Nile have very steep courses, and when in spate they are mighty torrents whereas the main stream of the upper Nile is sluggish. The Sobat floods before the Blue Nile, and when its waters come rushing into the main stream they dam it up, or pond it back, and form a kind of natural reservoir. A little later the Blue

<sup>1</sup> Rivers like the Thames, which have strong tidal waves scouring their estuaries every day, cannot build deltas.

Nile rises, and when it is at its highest, in August and September, it is so powerful that it dams up the whole of the Nile basin above Khartoum, until it has got rid of its surplus water. When it begins to fall the ponded-up water of the White Nile runs off, and after that the dammed-up torrents of

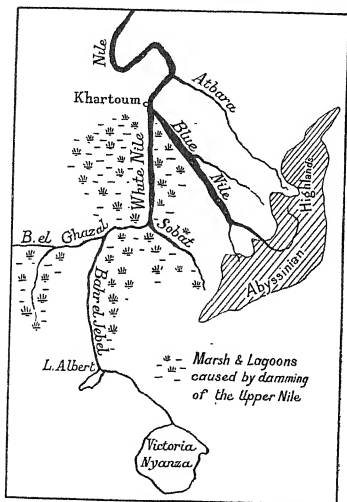


Fig. 26. Showing the Blue Nile in flood serving as a dam and ponding back the White Nile and its tributaries.

the Sobat and Bahr el-Jebel (or Upper Nile) gradually run off. This keeps the Nile high until January when Low Nile sets in. When the Abyssinian rains are unusually light or end very early, Low Nile is prolonged with dire results to Egypt.



*Climate of Egypt.* Along the north coast the climate is of the Mediterranean type, Alexandria getting a winter rainfall of 8 inches. The winter is mild and pleasant, and lasts about four months. But inland desert conditions set in at once, so that Cairo has little more than one inch of rain. South of Cairo the rainfall is nil, and the temperature high all the year round. The annual range is still considerable, as will be seen by the figures for Wadi Halfa, and the daily range is great owing to the rapid heating and cooling capacity of the bare rock and sand.

## TEMPERATURE (Fahr. Degrees).

	<i>Winter.</i>			<i>Spring.</i>			<i>Summer.</i>			<i>Autumn.</i>			<i>Ann.</i>
	D.	J.	F.	M.	A.	M.	J.	J <sup>l</sup> .	A.	S.	O.	N.	
Alexandria.	61	57	58	61	65	70	74	78	79	77	74	67	68
Cairo.	58	54	58	62	69	76	81	83	82	77	74	65	70
Assiut.	58	53	55	63	72	80	85	86	85	81	73	66	71
Wadi Halfa.	63	59	63	71	80	88	91	90	90	87	83	71	78

## RAINFALL (inches).

Alexandria.	2.48	2.32	1.24	0.68	0.12	0.04	0	0	0	0.08	0.32	1.52	8.80
Cairo.	0.24	0.36	0.20	0.16	0.08	0.04	0	0	0	0	0.04	0.16	1.28

Egypt is in the north-east trade-wind belt, and for the greater part of the year the wind blows from some northerly quarter. The fact that the air is moving southwards and becoming always hotter prevents the condensation of water vapour: hence the absence of rain.

In the spring, moving areas of low pressure occur in the Mediterranean along the African coast. These, coupled with a high pressure in Upper Egypt cause a wind to blow down the Nile<sup>1</sup> for two or three days at a time. This wind, known as the *Khamsin*, brings clouds of dust and sand and great heat, and is very unpleasant.

*Vegetation.* Of natural vegetation there is little in Egypt, except for the desert scrub and cactus and a few trees such as date palms and acacias along the water courses.

<sup>1</sup> Winds always blow out from a high pressure and in towards a low pressure area.

*Irrigation and Agriculture.* Egyptian agriculture is entirely dependent on irrigation, of which two distinct kinds are used to-day, (a) basin irrigation, and (b) perennial irrigation.

(a) Basin irrigation is the old system that has been used from earliest times. The country along the river banks is divided into sections by high dykes, and the turbid flood water flowing into these enclosures, remains for five or six weeks till the mud is deposited and the land soaked. Then, as the river falls, the water drains off through breaches in the dykes, and by November crops can be sowed. These crops, temperate cereals which will ripen in the cool months, are reaped in April and May, and then the land lies fallow under the summer sun till autumn floods return. This system is relatively cheap, and under it the land needs no manuring, for the annual mud deposit suffices for the annual crop. But land so irrigated suffers greatly if the floods are scanty, and is useless in the hot season when valuable tropical produce will mature.

(b) Perennial irrigation is the modern system which by dams, barrages, and reservoirs stores up the surplus water of the flood period and distributes it by canals throughout the land in the dry summer months. It was inaugurated early in the nineteenth century when the value of Egyptian cotton began to be realized, for cotton has to be sown in March and to ripen during the hot months. The system which began in the delta has spread by the building of more dams and reservoirs as far up as about latitude  $25^{\circ}$  N. and some of the most beautiful of the old Egyptian buildings have been flooded and partly destroyed by the ponding back of the water (e. g. the temple of Philae). Perennially irrigated land will produce three crops a year on the same piece of ground,<sup>1</sup> but a good deal of artificial fertilizing is needed, partly because more is taken out of the land, and partly because the perennial system gives a far scantier deposit of mud.

<sup>1</sup> In many parts of the world where one reads of several crops a year on the same holding, it is not meant that the same piece of ground produces the different crops. Only very fertile land will stand this.

Of the hot season crops, cotton and sugar are the chief, together with millet and rice. In the cool season, wheat, barley, and maize are grown, and quantities of such vegetables as onions, beans, cucumbers, and melons. In the days of ancient

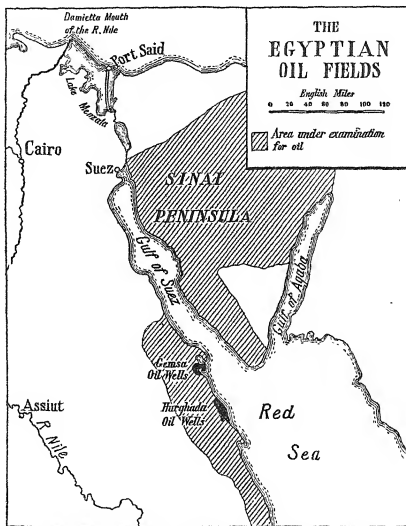


Fig. 27. The Egyptian Oil Fields.

Rome, Egypt was one of the chief wheat-producing areas for the Empire, but in modern times cotton has quite outstripped it in importance, for Egyptian cotton has certain qualities that cannot be equalled by any other, while the vast wheat regions of the New World have made Egyptian corn less valuable.

*Other Occupations.* Agriculture is by far the most important resource, for mineral wealth is scanty except for the fine building-stones such as Assuan granite and the sandstones of Luxor, which have made the land famous for its temples and monuments, and are still quarried extensively. The country has no coal, and this, combined with the absence of wood, has always made fuel a grave problem, and has hindered the progress of railways and all similar undertakings. Since the middle of the last century the existence of oil along the Gulf of Suez and in the Sinai Peninsula had been suspected. The shortage of oil and fuel in general occasioned by the European War caused this area to be examined with great outlay of capital, and workable oil was discovered in many places. At present the chief oil-field is at Hurghada (see Fig. 27). At Gemsa, close by, a high quality of oil is found, and the wells here will ultimately be developed. Nearly all the oil at present produced is used locally for fuel. The crude oil is all shipped to Suez, where it is refined. The oil trade has so greatly increased the importance of Suez, that the Egyptian Government are building a large new harbour there, where the biggest oil-ships can be docked and bunkered.

Manufactures are few, partly, no doubt, because of the lack of fuel. A considerable amount of cotton is woven for local requirements, but almost all manufactured articles are imported from the United Kingdom.

*People.* It is only below Assuan that the land is densely populated, and there only for a narrow strip along the river. The agricultural labourers or *fellahin* are descendants of the early Egyptians and are of curiously unmixed race. In early days the great fertility of the land resulted in a dense peasant population and hence very cheap labour. As a result the ruling classes became enormously rich, and the fellahin downtrodden and oppressed. They lived mainly in the delta, which is so cut up by the numerous distributaries of the Nile that it is divided into many isolated areas. Hence there was never any political unity among the masses, and they never outgrew

their early subservience. Their houses are miserable huts of brick made from Nile mud and straw<sup>1</sup> dried in the sun. They are cool, and the absence of rain makes them sufficiently durable. In such a climate comparatively little shelter is needed, and so these dwellings have never been improved.

The wealth of the upper classes produced a high degree of civilization at an epoch when most of the known world was just emerging from barbarism. There was plenty of leisure for the pursuit of the arts, learning and philosophy, and so for many centuries Egypt led the world in these matters.

*Towns, Routes, and Trades.* The towns of Egypt are situated at the natural trade centres of the river and the Red Sea, namely Alexandria at the mouth, Cairo at the apex of the delta, Assiut, an old caravan terminus, Assuan, where navigation is interrupted by the first cataract, Wadi Halfa at the second cataract, and Suez, and Port Said commanding the canal.

Alexandria (pop. 573,000) is a purely commercial town, the only modern port of the delta and a terminus of the Nile railway. Almost all the export and import trade of the country passes through Alexandria, and about half the total trade is with the United Kingdom. The chief articles of export are raw cotton, cotton-seed, eggs, and oil-seed cake, the latter for winter-feeding our cattle. The chief imports from Great Britain are cotton goods, and coal.

Cairo (pop. 1,000,000) is the chief town of Egypt and the largest city of Africa. It rose to importance as a caravan centre because its position at the head of the delta made it an excellent distributing place, but since the decline of caravan trade it has become primarily an administrative centre. The railway lines from Alexandria, Damietta, Port Said, and Suez naturally converge on Cairo, and add greatly to its importance.

Assiut is a town of 57,000 people, the largest place on the Nile south of Cairo. Its early importance<sup>2</sup> was due to its being the northern terminus of important caravan routes, and in

<sup>1</sup> Cf. the Bible story of the brick-making of the Israelites in Egypt.

recent years it has grown because of large irrigation works just below it on the river.

*The Suez Canal* (see p. 2) is 103 miles long, but is so narrow<sup>1</sup> and shallow that the largest type of modern vessel cannot get through it. Hence the passenger boats of such famous lines as the P. and O. are very unimpressive when seen beside the enormous Atlantic liners of the present day. In normal times about 5,000 vessels go through the Canal in a year, and about two-thirds of the net tonnage is British.

Canal dues are so high that where speed is not essential boats still prefer to go round by the Cape of Good Hope, picking up and discharging cargoes at the Canaries, West Africa, the Cape, and Mauritius, and so recouping themselves for the expense of the longer voyage.

Assuan, besides being a trade centre, a frontier town, and a railway terminus, has famous granite quarries and is a tourist resort of some importance.

The delta railways which meet at Cairo are continued by a line running up the Nile to Assuan, above which a break of over 200 miles occurs where the Sudanese railway has not been extended to the Egyptian frontier. Owing to this break, and to the construction of a line from Khartum to Port Sudan on the Red Sea, most of the Sudanese railway traffic goes out to the Red Sea and not down the Nile.

The Nile is a valuable waterway, for the produce of Egypt is bulky and imperishable, and so is most profitably sent by water. Navigation is checked at Assuan by the cataract which is three miles long, but since the barrage just below Assuan was built, this obstacle can be circumvented by canal even during the low Nile season.

#### TRIPOLI

Between Egypt and the Atlas region lies the country of Tripoli, for many years a Turkish province but since 1911 under the control of Italy.

<sup>1</sup> This defect is being gradually remedied.

The area of Tripoli is about 400,000 square miles, but most of this is uninhabited desert. The country consists of a fairly wide coastal plain, behind which rises a hilly plateau. The coastal region has a moderate winter rainfall but is intensely hot and dry in summer. The usual Mediterranean fruits and cereals are grown, olives being the chief crop.

The population of about 500,000 is chiefly Berbers, Europeans numbering only 5,000 or 6,000. The chief town is the port of Tripoli (pop. 60,000), founded by the Phoenicians and important throughout the Middle Ages. It declined under Ottoman rule and is to-day of minor importance, but is rapidly regaining a measure of prosperity, and exports the local produce, silk, tobacco, oil, soap, sponges, &c.

#### POLITICAL BOUNDARIES OF THE EASTERN MEDITERRANEAN LANDS

In the Eastern Mediterranean lands, as in the other parts of eastern Europe, an attempt was made to arrange the new boundaries on a racial basis; but, as elsewhere, military and strategic compromises played also a large part in the delimitation, so that the idealistic modern principle of self-determination struggled with the age-old principle of *vae victis*, and neither entirely prevailed.

The net result was that Bulgaria and Turkey suffered the fate of the vanquished, the Turk being virtually expelled from Europe; and a large new unit, theoretically and to a great extent practically based on racial claims, was created and called Yugo-Slavia, or the kingdom of the South Slavs.

The most important changes made in existing boundaries were as follows:

*Bulgaria.* (1) The western boundary of Bulgaria was straightened, so that the salients which belonged to Bulgaria, especially that of Strumitsa, are now part of Yugo-Slavia.

(2) In the south Bulgaria was deprived of the strip of territory fronting on the Aegean, which gave her an outlet by the port of Dedeagach. Thus her old enemy Greece, to whom

this strip was given, intercepts her passage to the sea (see p. 84).

Bulgaria's only remaining sea-coast is on the Black Sea, and her national ambition, which has always been for sea-outlets, received a fatal blow.

*Turkey* retains nothing in Europe except the town of Constantinople and Eastern Thrace. This position is of little strategic importance to her, owing to the provision that the waterway from the Aegean to the Black Sea and the land on each side of it shall be under the control of an international commission. The straits are to be open both in peace and war to all traffic, whether military or otherwise.

In the Near East Turkey lost control of Armenia, Mesopotamia (since called Iraq), Syria, Palestine, and the Hejaz, all of which are now independent states. Thus only a small part of Asia Minor remains to Turkey.

*Greece* acquired practically all that Bulgaria and Turkey lost, viz. Bulgaria's Aegean coast, and almost all the Aegean Islands.

*Albania* is a bone of contention between Italy and Yugo-Slavia. Economically Italy has considerable claims to political control of this state, for she already gets most of its trade; while from a strategic point of view Yugo-Slavia objects to having a country that has never been very friendly to the South Slavs in control of a strip of adjacent coast.

It will be seen from the above that these are serious reasons for doubting the stability of the present settlement, the chief being that the Bulgarians, a nation of industrious and sturdy peasant farmers, are not likely to submit without a murmur to the balking of all their national ambitions.



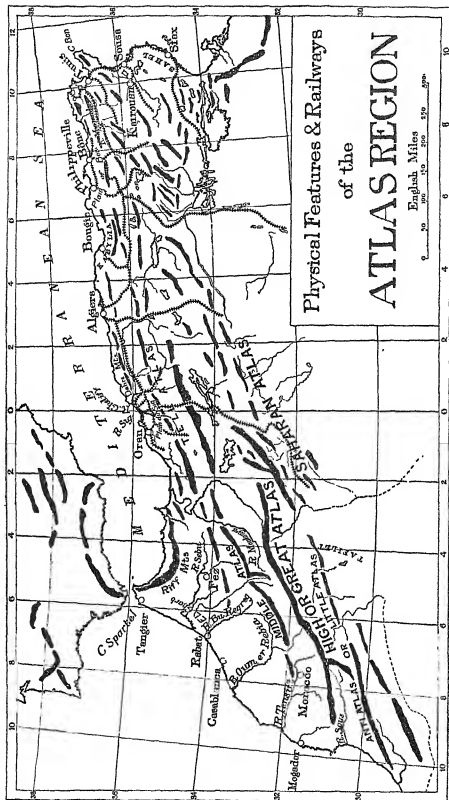


Fig. 28.

## V

# The Western Mediterranean Lands

## THE ATLAS REGION

(*Note.* Since ordinary English atlases contain no adequate map of the Atlas Region, the position of all physical features, towns, &c., mentioned in the text is shown in the accompanying diagram, fig. 28).

*General Character.* The western Mediterranean is bounded on the south by a mountainous plateau which, though joined to the African continent, is, as has been said (p. 56), in almost every geographical sense a region of southern Europe. This plateau has at different times been known as Barbary (from the *Berber* tribes) and Mauretania (from *Moor*), but at the present day is usually named from the Atlas mountains which form its backbone. It is divided politically into Morocco, Algeria, and Tunis, Algeria being a French province, and most of Morocco and Tunis French protectorates.

The maps of Africa contained in most of our atlases are on so small a scale as to give a very misleading idea of the size and importance of the Atlas region. It is considerably larger than France and Spain combined,<sup>1</sup> and contains large tracts of land as rich as any in Europe.

The Atlas plateau, since it is separated from Spain and Sicily only by narrow straits and from the rest of Africa by a veritable ocean of more or less impassable wastes, is European in its climate and vegetation, as well as in its political and commercial affinities. The desert is not an absolutely impassable barrier to animals, and the fauna is accordingly partly African and partly European. Geologically the Atlas Mountains resemble in structure and trend the folded mountains of southern Spain, while the plateau of Algeria is in

<sup>1</sup> The modern political boundaries include a far bigger area, as large tracts of the Sahara have recently been annexed to Algeria.

general aspect like a fragment of the Spanish meseta. Mauretania contains two natural divisions, a coastal lowland, and a high plateau behind it. The plateau is separated from the coast and from the desert by high mountain barriers known *en masse* as the Atlas Mountains. These, like the Alps, have many regional names; but, as is often the case in relatively unexplored and undeveloped countries, there is considerable variety and confusion in the nomenclature. Thus in Morocco we have the High Atlas or Great Atlas, which has an off-shoot in the Little Atlas or Anti-Atlas. In Algeria the chief range is called indifferently the Mediterranean Atlas, the Tell Atlas or the Maritime Atlas. Between the High Atlas and the Mediterranean Atlas is the Middle Atlas, and the ridges and escarpments that bound the plateau on the south are the Saharan Atlas.

Since the mountain ridges run parallel to the coast, the rivers which rise on the central plateau have had to break through them in gaps and gorges to reach the sea. A few of the seaward-flowing streams are perennial, but their rough and steep courses render them unnavigable, and their deep narrow valleys are not easy routes. Those rivers which flow inland and are absorbed in the desert, are mere *wadis*,<sup>1</sup> dry for most of the year.

*Climate.* The climate of the Atlas is generally speaking Mediterranean in type, so that the country is well suited for European settlement. The summers are hot but so dry as to be notwithstanding very healthy. The winters are mild except on the high uplands. The rainfall is fairly abundant on the coast, but diminishes rapidly southwards as the influence of the westerly winds grows less and less. There is everywhere a decided summer drought, due largely to the fact that the westerly wind-belt has shifted north, so that the Atlas no longer lies in the path of the Atlantic cyclones; but the season of maximum rainfall varies according to locality,

<sup>1</sup> *Wadi* is used by the Arabs both for the stream and for its dry valley, a natural result of the fact that their streams are mostly intermittent.

sometimes occurring in midwinter, sometimes in spring or autumn.

*Vegetation and Agriculture.* The vegetation is, of course, of the type always found where intense summer heat is aggravated by drought and cloudless skies, and where the season of suspended life is summer and not winter. Such trees and shrubs as the olive, laurel, orange, fig, cork-oak, and vine flourish near the coast, and on the uplands are great tracts of steppe. Wheat and maize are the staple grains, and the warmth of the winter and early spring gives rise to an important trade in early vegetables.

As the Atlas region lies at the southern margin of the climatic belt of winter rains, its rainfall is uncertain and variable in quantity, and, as a result, in almost two years out of three the harvests are a failure, while in the third they may be so enormously successful as to compensate for the lean years.

*Minerals.* The uncertainty and irregularity of the harvests is bad for the commercial progress of the country, and of late years its mineral wealth is being developed with a view to providing a reliable source of revenue. Copper, iron, and phosphates are becoming important exports, and various other minerals are found in small quantities.

*Colonization.* During the last few years there has been a great rush of European settlers to Mauretania, and in the wilder parts, especially of Morocco, the primitive food and transport service has broken down under the strain, so that settlement is much retarded by the difficulty of obtaining the necessities of life.

## Natural Regions

The two main natural divisions of Mauretania have already been indicated, viz.:

(a) A coastal region of very varied relief, rising by terraces to the Atlas ridges behind which lies

(b) a high plateau that falls steeply southward to the Sahara.

Mauretania also includes a strip of desert and semi-desert south of the Saharan Atlas, a region of oases connected by caravan tracks and producing mainly dates. But this is in no sense European.

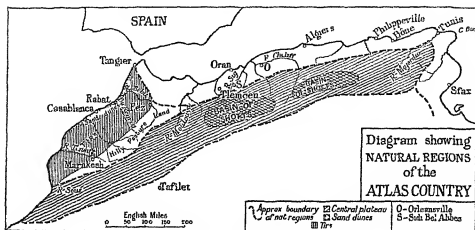


Fig. 29.

## The Coastal Region

*General Character.* To understand the relief of this region one must picture a geological epoch when the whole north coast of Mauretania, from Cape Spartel to Cape Bon, was cut off from the interior by a barrier of continuous mountain ridges parallel to the coast. In process of time breaches were made in this barrier, through which flowed copious rivers. The gaps were gradually widened by erosion and weathering, until a series of large alluvial depressions were formed, separated from one another by fragments of the original coastal barrier. Thus one finds the Plain of the Sig, the Metija Plain, and the Plain of Bône, separated by the Dahra Mountains, and the uplands of Kabylia (see fig. 28).

The rivers which drain these depressions run for the most part through longitudinal valleys of considerable length, before they turn sharply to cut the ridges transversely near their mouths (e. g. the Sig, the Chelif, the Sahel, the Sebu). Consequently these longitudinal valleys form a trough-like depression behind the coastal plains and ridges, and from this

depression the land rises in great terraces to the Atlas heights. It is to this longitudinal depression that the name Tell<sup>1</sup> is often applied.

The west coast of Morocco and the east and north-east coasts of Tunis are at right angles, not parallel, to the trend of the ridges, and here much wider and more continuous coastal lowlands have been formed. Also the rivers here have, on the whole, direct longitudinal courses without the elbow turns characteristic of the Algerian streams. Hence access to the interior by river-valley routes is often practicable, whereas in Algeria the L-shaped valleys do not readily give access to the plateau behind.

## TEMPERATURE (Fahr. Degrees).

	<i>Winter.</i>			<i>Spring.</i>			<i>Summer.</i>			<i>Autumn.</i>			<i>Ann.</i>
	D.	J.	F.	M.	A.	M.	J.	J <sup>v</sup> .	A.	S.	O.	N.	
Casablanca	56	53	55	58	61	65	68	71	73	70	66	60	63
Marrakesh	54	52	55	59	67	69	77	82	85	76	70	62	67
Algiers	56	53	55	58	61	66	71	77	77	75	68	62	56
Tunis	53	50	52	54	59	66	74	79	80	76	68	59	64

## RAINFALL (inches).

Casablanca	2.20	1.60	2.20	2.96	1.28	1.52	0.16	0.00	0.00	0.76	1.20	3.24	16.92
Marrakesh	0.88	1.36	1.24	1.44	1.08	0.76	0.28	0.20	0.00	0.28	0.48	1.48	9.48
Algiers	5.48	4.28	3.60	3.56	2.36	1.32	0.60	0.08	0.28	1.08	3.20	4.68	30.60
Tunis	2.64	2.24	2.00	2.40	1.88	0.92	0.64	0.32	0.40	0.88	1.60	2.36	18.20

*Climate.* The climate of the coastal region is typically Mediterranean, as the above figures indicate. The fact that it lies at the extreme southern limit of the zone of influence of the westerly wind-belt accounts for the rapid diminution of rain southwards, so that the Riff and the strip of the north coast between Algiers and Bône get a far more abundant winter rainfall than the rest. As one moves inland the temperatures become more extreme. On the uplands some snow falls in winter, and on the highest parts of the Atlas snow lies for the greater part of the year. As in southern Spain, the summer is a trying season, and accounts of the exquisite climate of Algiers emanate from winter visitors who have not known the hardship of the scorching, sand-laden winds, sometimes

<sup>1</sup> Some geographers, however, give the name Tell to the whole coastal region of Mauretania.

called sirocco,<sup>1</sup> which blow from the desert in the summer months.

The natural vegetation of the region is typically Mediterranean, and need not, therefore, be described here. The economic development, which is almost wholly agricultural, differs somewhat in the three countries.

*The Algerian Coast: Relief.* The northern coastal region consists, as has been said, of alternating mountain masses and alluvial basins backed by a longitudinal depression in which run the upper reaches of the Algerian rivers (see p. 126). The chief rivers are the Moulouya, Sahel, and Chelif, all of which have the characteristic narrow steep-sided upper valleys. In the wet season their watercourses are torrential, and they bring down great masses of mud which in the course of ages has built up wide marshy plains at their mouths and has silted up their outlets so as to prevent navigation. In the summer they are mere threads of water, and often they dry up for some weeks. Though quite useless for navigation, they are of late years being utilized for irrigation, and their waters render cultivable thousands of acres of new land.

*Occupations.* The alluvial plains and coastal slopes and terraces are peculiarly adapted, both in soil and climate, for vine culture; and as Algeria and Tunis were being opened up to Europeans at just about the time when the phylloxera was devastating the French vineyards, the wine industry almost immediately overran the North African coast, and it is still by far the most important occupation. Its only rival is market-gardening which is very profitable on the plains close to the sea, where rain is abundant, extremes of temperature are absent, and ports for export are close at hand. The fact that the very early and warm spring ripens fruits and vegetables before they are obtainable in Europe means an insatiable market for these products.

<sup>1</sup> Not to be confused with the characteristic wind of the winter rainy season of the Mediterranean, which is also called sirocco, but brings wet and cloudy weather.

In Roman times North Africa was one of the chief granaries of Europe. To-day wheat and barley are grown extensively in the inland valleys, wherever they have not been ousted by the vine. The spring and autumn weather is often unfavourable to the grain-harvest and ploughing, but in good years the crops are very heavy even with primitive native methods of farming. Olives and other Mediterranean fruits are also extensively grown on the sunny terraces.

The highland masses of the coastal regions are characterized by a relief so broken and precipitous that cultivable soil exists only in scraps and pockets of land between the sharp ridges. These, supplemented by laborious terrace cultivation, give a scanty support to native tribes such as the Kabyles. These people have been so beset by hostile invasions, that they build their villages on bleak and inaccessible mountain-tops, whence they descend to care for their scattered morsels of land.

The slopes of the mountains are everywhere densely forested, the cork-oak being the tree of greatest economic value.

*Towns and Routes.* The chief towns of the northern coastal region are, of course, the ports. The coast is a very difficult one, with its alternating mountain barriers and shifting sands, but each of the great lowlands has a fair harbour. These harbours are built in the lee of any promontory which lies in such a way as to protect the shipping from the strong current which flows eastwards through the Strait of Gibraltar.

Oran (pop. 150,000) and Algiers (pop. 226,000) are the chief ports, being the outlets respectively of the large basins of Sig and the Metija.

Oran has become an important railway centre, for it is the terminus of the route along the Tell depression from Algiers, and also of one of the three lines that manage to cross the plateau to the oases on the edge of the desert.

The harbour of Algiers is artificial but good. The town is a railway centre like Oran, and does much export and import trade. Its population is increased by the fact that it has



a delightful winter climate, a good water-supply, a healthy situation, and very beautiful surroundings.

Besides the ports, North Africa has a line of fairly large inland towns with populations of thirty to forty thousand, e. g. Tlemçen, Sidi-bel-Abbes, Orléansville. These are market-centres standing where fertile depressions such as the Tell, or cultivable uplands, support a population denser and more prosperous than the average.

Until the coming of the French,<sup>1</sup> the roads of North Africa were unmetalled tracks, but as most of the transport was, and is, by beasts of burden, they were adequate to the needs of all except the richest areas.

Railways were begun as early as 1870, and since the beginning of the present century have advanced rapidly. They follow the steep river valleys both longitudinally and transversely. The lines which run from north to south are usually short, for the difficulty of getting up on to and across the plateau is great. In three places, however, long transverse railways have been made, (1) from Oran south to the oases of Figuig and Colomb Béchar, (2) from Algiers across the plateau to the oases of Laghouat, and (3) from Philippeville south to the oasis of Ouargha.

*The Moroccan Coast: Relief.* The Atlantic Coast Region of Morocco consists of (a) a narrow and not continuous coastal belt of sand-dunes, (b) a broad belt of flat lowland behind the sand-dunes, and (c) a belt of much more hilly and varied lowland rising in terraces to the Atlas ridges and plateaus. The coastal plain may be divided from the hilly lowland by a line running from Tangier by Fez to Marrakesh.

Across these belts run several rivers, of which the chief are the Sebu, the Bu-Regreg, Um-er-Rebia, the Tensift and the Sus. These receive a fair amount of water from the melting snows of the Atlas, and are used very extensively for irrigation.

<sup>1</sup> The French occupied the town of Algiers in 1830, and have gradually extended their power over the whole Atlas region. Tunis became a French protectorate in 1881, Morocco in 1912. Algeria was proclaimed a French colony in 1901. Now there is a good system of motor roads.

They diminish greatly in the dry season, and are never navigable, but their long direct valleys form good routes to the interior.

*Agriculture.* The flat plain is very fertile, especially between the Bu-Regreg and the Sus, where a broad strip of loess,<sup>1</sup> known locally as *Tirs*, is inexhaustibly productive. The *Tirs* is, like other regions of black earth, given over almost entirely to grain,<sup>2</sup> but north of it the lowland has large gardens of olives, oranges, and other fruits.

The hilly lowland gets water enough to produce good pasture, and is used almost entirely for cattle, crops being grown to supplement their food, but not for export. As a result oxen and skins are two of the chief exports of Morocco.

The whole of west Morocco is almost treeless, except round the villages where trees and extensive orchards are found.

*Towns and Routes.* Like the Algerian coastal region, Morocco has two lines of towns, one of ports along the coast at the river mouths, and one of political and commercial centres inland.

At the present day Casablanca<sup>3</sup> (pop. 106,000) is by far the largest Moroccan port. During the present century French enterprise has increased its population fourfold, and its trade is now three times that of the older port of Tangier. This growth of trade is mainly due to increase in barley and flour exported from the *Tirs*. It is now also an airport.

Tangier (pop. 60,000) having a harbour protected from the westerly cyclones, early became a trade centre. It supplies the barren rock of Gibraltar with daily food for the garrison, and is the outlet of the fertile plain of the Gharb, a rich fruit region. It does not grow like Casablanca, because it has not the same modern facilities for shipping, such as large quays, docks, &c.<sup>4</sup>

Rabat is another port about the size of Tangier. It also has not the modern improvements necessary for large trade, but it serves as a subsidiary outlet for the *Tirs* district.

<sup>1</sup> Similar to the black earth of Russia.

<sup>2</sup> Especially barley here.

<sup>3</sup> Formerly Dar-el-Baida.

<sup>4</sup> It is now under international control.

The inland towns stand near the edge of the upland, where the rivers are full enough to give a good water-supply, while their valleys afford direct routes to the coast. The chief are Fez (pop. 81,000) and Marrakesh<sup>1</sup> (pop. 149,000). They are old centres of civilization dating from a time when external trade was of no importance. They have always been seats of

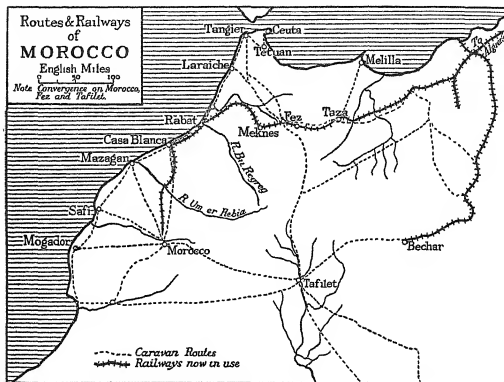


Fig. 30.

government, of learning, and of native trade, and hence strong magnets to population. The inhabitants are almost all natives, Fez having only 855 Europeans.

Railways and roads are being rapidly extended in Morocco by the French and there is now a line to Marrakesh. All the coastal towns have well-defined trade routes converging on Fez and Marrakesh, and the great oases of the interior, such as Tafilet, send their produce to one of these two towns for export to the coast.

<sup>1</sup> i. e. Morocco.

*Trade.* Barley is the chief export of Morocco, but oxen, goat skins, wheat, and almonds are also very important. The typical Mediterranean products of olive-oil and wine are absent, because primitive methods do not produce them in a quality suitable for foreign trade.

*The Tunisian Coast: General Character.* The coastal region of Tunis has, like Morocco, a considerable extent of lowland, but as the rainfall is scanty except in the north, the region of cultivation is a very narrow coastal strip behind which extend semi-barren steppes.

Close to the sea extend a series of very low sandy hills known as Sahels. These have a light but fertile soil, and are terraced and planted with olives. North of latitude  $36^{\circ}$  N. olives gradually give place to cereals, wheat and barley being the chief crops of northern Tunis. Inland beyond the Sahel region stretches an expanse of steppe, part of which is covered with alfa or esparto grass, and part affords good pasture. Great quantities of phosphates are obtained in the steppe region, and this substance is so valuable that it has of late years become the chief export of Tunis.

*Towns.* The only large centres of population are the ports. Of these Tunis has a population of nearly 200,000, and is, next to Algiers, the largest town in the Atlas Region. It stands at the mouth of the river Majerda, close to the ruins of Carthage, and the river channel has been deepened so as to give free access for large vessels. The town owes its great size to three main conditions. (1) It is the outlet of a fertile grain district which at one time was a chief source of supply for southern Europe; (2) it is well fortified; (3) it is a centre of government and of learning.

Sfax (pop. about 27,000) and Sousa (pop. 21,000) are ports whence phosphates, olive-oil, and alfa grass are exported, and where the manufacture of olive-oil is so important that its by-products supply raw material for large soap manufactures.

In Roman days the interior had many large towns, but

to-day the holy city of Kairwan (pop. about 18,000) is the only one left.

*Railways.* Tunisia has several short railways connecting the ports with the interior, but no through routes except one to Algiers.

## The Plateau of the Atlas

*General Character.* The Tell Atlas and the Saharan Atlas converge toward Tunis and toward Morocco, and form an enclosing frame to the lozenge-shaped central plateau. This plateau is divided by low water-partings into a series of shallow basins of inland drainage which collect the water from the surrounding heights. Having no outlet this water forms extensive but shallow salt lakes, known as *shotts* or *chotts*. The general surface of the plateau is flat and unbroken by hills, but it is abundantly dissected by ravines or *wadis* carved by rushing torrents after a spell of rain, but usually devoid of running water.

*Climate.* The climate and vegetation of the plateau are markedly of the steppe type. The rainfall is scanty and very irregular, and in the Moroccan section drought is so intense that man fights with the beasts to secure for himself a few drops of moisture in a rocky crevice. Extreme cold and fierce winds prevail in winter, and the spring is the most tolerable of the seasons.

*Occupations.* Cultivation is, of course, impossible. The natural vegetation is coarse grass, a tree being a rare landmark for miles about. Most of the grass is suitable for pasture, but round the chotts, especially in west Algeria, are large expanses of alfa or esparto grass, exported for making paper and similar substances.

By dint of husbanding the water in cisterns and making the most of damp ravine bottoms and other freshwater depressions, a small scattered and nomadic pastoral population manage to exist. In former days these people went in chiefly for camel rearing, but since the French took over Algeria and began to

build railways and encourage trade, the nomadic herdsmen have turned their energy toward large herds of sheep and even of cattle. Collective ownership of land and the patriarchal system tend to be replaced by individual ownership and the system of hired labour, and in favourable spots some cultivation is attempted.

*Routes.* The central plateau presents great difficulties to roads and railways, partly because of its border of rather inaccessible mountains, and partly because of the numerous ravines, which interrupt routes across the plateau surface and are themselves too steep and narrow to make valley-bottom routes. Railways have, however, been built inland from the ports of Oran, Algiers, Philippeville, Bône, Sousa, and Sfax, running across the plateau in straight lines to the series of oases which lie along the foot of the Saharan Atlas escarpment, and considerable trade is carried on in pastoral and desert products.

## THE IBERIAN PENINSULA

*Introduction.* It has often been remarked that the Spanish peninsula is in many ways a miniature presentment of the continent of Africa, and it is a fact that just as, for so long, Africa was the 'Dark Continent' of the world, so for nearly three centuries Spain has been the 'dark' country of western Europe.

In Elizabethan times Spain was in every Englishman's mouth, because she was a rival sea-power and had rich colonies. To-day the ordinary Englishman knows less about Spain than about any other part of western Europe. Why is this? Obviously because Spain and Portugal have been left far behind in the modern commercial struggle. But again, why have they been so left behind? Just as in studying the Balkan Peninsula one is concerned to know why it is a perpetual battlefield, so in studying the Iberian Peninsula one is concerned to know why, with all its advantages of position, it has been so little a country to be reckoned with in modern Europe.

The following account will show that, as in Africa so in Spain, shape, configuration, relief, and climate are against its commercial development, and throughout its history these have combined to produce a people utterly rebellious against or indifferent to the rush for industrial wealth.

## The Peninsula as a Whole

*General Character.* Iberia is a roughly quadrilateral plateau with an exceedingly regular and unindented coast line. It was joined to the continent of Africa until a recent geological period and one cannot even glance at a geological map of the Mediterranean countries without seeing that North Africa and southern Spain are closely connected structurally. The plateau is a mass of old hard rock, largely granitic, which has been worn down to a peneplain and then gradually upheaved. There lie, however, in saucer-like hollows on the surface of the tableland, great expanses of very recent deposits. These saucers (the Tagus basin or La Mancha, the Upper Ebro basin and the Upper Douro basin) were in recent geological times great lakes which gradually were drained and dried up. To the north and south of this old core of resistant rock are young mountain ranges, which were folded and crushed against it at about the same epoch as that of the Alpine foldings. (Cf. Balkan Peninsula, pp. 57-8.) These folds form the Pyrenees and Cantabrian Mountains in the north, and the variously named ridges<sup>1</sup> of eastern Andalusia and Murcia in the south-east.

The coastal plain which borders the peninsula is very narrow except on the west and south-west.

The whole plateau is somewhat tilted toward the west, so that most of the big rivers flow westward and rise near the east coast, e.g. the Douro, Tagus, Guadiana, and Guadalquivir. The Ebro, rising in the Cantabrian mountains, is the only large river flowing east, but the Jucar though small is of some importance.

<sup>1</sup> Often called the Sierra Nevada, although the name properly applies only to one small and high ridge south of Granada.

Owing to lack of water and many cascades and rapids, the Iberian rivers are ill-adapted for navigation, though the larger ones are used by small boats over part of their lower courses.

It is worth noticing that the names of the rivers, and indeed of other physical features, in southern Spain are corruptions of Arabic names given during the Moorish occupation. Thus the prefix *guad* is the Arabic *wadi*, the name given by the Arabs to the intermittent streams of their own dry country. *Guadalquivir* is *Wadi-el-Kebir*, meaning great river.

The fact that Spain is tilted westward involves that all its large coastal lowlands as well as its best river-mouth harbours are on the Atlantic, so that the peninsula faces America and turns its back on the Mediterranean. This was a significant fact in the sixteenth century, when Spanish galleons poured into the country the spoils from America.

*Climate and Vegetation.* Owing to the compact shape and varied relief of the Iberian Peninsula, its climatic conditions are so full of complexity as to need specially detailed consideration. Because it lies in the same latitude as Italy, Greece, and Asia Minor, and is known to produce oranges, wine, &c., it is often and very naturally assumed that Iberia has a 'Mediterranean climate' in the technical meaning of the phrase. In point of fact the typical Mediterranean conditions are met with scarcely anywhere on the peninsula. It has the summer drought, but this is rarely combined with mild winters and a winter rainfall maximum.

The interior has cold winters with much snow and ice, and intensely hot summers. Spring and autumn are the rainy seasons as may be seen by reference to Fig. 32, p. 141, showing the monthly rainfall.

The north-west coastal region, from Santander round to Coimbra, has abundant rainfall all the year round, mild winters, and moderate summer heat, and the chief drawback to the delightful climate is its somewhat excessive dampness. This is a region of great fertility, densely forested in its natural state, and when cultivated producing on the northern coast the



fruits and grains of Great Britain and northern France, and on the west coast the vine.

The rest of the peninsula is very dry, very hot, and barren unless irrigated, but when watered it produces rich crops of all the typical Mediterranean fruits and grains.

*Minerals.* The mineral wealth of the peninsula, though as yet not fully developed, is known to be both great and varied. Spain is already the chief European source of copper ore, lead ore and mercury, and much silver, iron, and salt are mined. The copper comes almost entirely from the province of Huelva between the mouths of the Guadiana and Guadalquivir rivers. The mercury mines of Almaden, north of the Sierra Morena, are, next to those of California, the richest in the world. Lead comes chiefly from the south-eastern mountain ranges. The coal and iron mines of the northern coastal region are large and valuable.

### Natural Regions

The natural regions of the Iberian Peninsula are relatively simple, consisting of the great central tableland, the folded ranges abutting it on the north and south, and the various coastal lowlands which differ widely among themselves in climate and products.

The regions are as follows :

- (1) The Northern Folded Ranges.
- (2) The Central Plateau.
- (3) The North-western Shoulder.
- (4) The South-western Coastal Lowlands.
- (5) The Andalusian Lowlands with Algarve.
- (6) The Southern Folded Ranges.
- (7) The Eastern Coastal Lowlands.

### The Northern Folded Ranges

(The Pyrenees and Cantabrians.)

*General Character and Routes.* The Pyrenees, with their western prolongation the Cantabrian mountains, extend for about 500 miles, and form a barrier between Spain and the

rest of Europe. They consist of a core of old rock flanked to the north and south by slopes of young limestones and sands. They rise abruptly on the northern side, but on the Spanish side the slope is gradual, and long lateral spurs extend into the Ebro and Douro basins. These ranges are true 'sierras' (saws), for their gaps or cols are not much below their peaks, so that

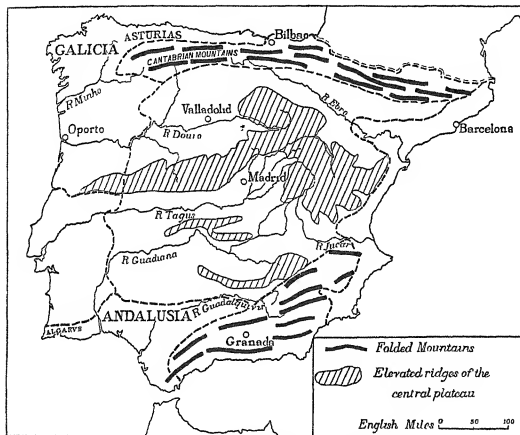


Fig. 31. Natural Regions of Spain.

compared with the Alps they are difficult to cross. Railways get round each end of the Pyrenees, at the eastern end by the Col de Perthus (950 feet), and at the western end by a col leading through from San Sebastian to Vitoria.<sup>1</sup> Besides these, several carriage roads cross the Pyrenees. A railway gets through the Cantabrians from Santander to Madrid by the Col de Reinos.

<sup>1</sup> A railway now pierces the Pyrenees under the Col de Somport to Saragossa.

The Pyrenees and Cantabrians for the most part are one high continuous ridge like the Apennines (pp. 153-4), so they lack the beautiful longitudinal valleys of the Alps. Moreover they have far fewer springs, snow sheets, and glaciers. The highest peaks, Maladetta (11,170 feet) and Perdu (11,000), are much lower than Mont Blanc.

The scenery of the western end of the Pyrenees resembles that of the Central German Highlands, with rounded, forest-covered heights. The eastern end has bare white limestone cliffs overlooking cork-oak forests, olive-groves and vineyards.

### The Central Plateau

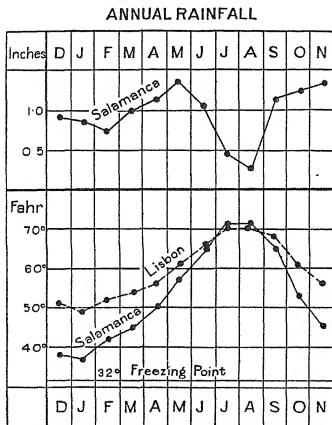
*General Character.* The Central Plateau, or, as it is often called, the Spanish Meseta, consists of four large river basins separated by high ranges of old granitic rock. In the north are the Douro and the Upper Ebro, draining the land in opposite directions. These two are bounded on the south by a series of ranges<sup>1</sup> rising to 4,000 or 5,000 feet, and forming a continuous barrier across the peninsula. South of these mountains is the Tagus basin, separated from the Guadiana basin by the Guadaloupe and Toledo ranges. As has been said, the plateau was in remote ages a peneplain composed of old hard rock. The four basins were large shallow lakes, and as the plateau rose and these were drained, a deep deposit of young and unconsolidated rock covered their floors. Into this soft rock the rivers of the present day have cut deep winding gorges, deepened in the case of the Ebro by faulting. The rivers have many rapids, and the dry climate renders their volume so inadequate that they are obstacles and not aids to communication. The scenery of the Tagus valley resembles that of the Grand Cañon of the Colorado on a small scale. A gorge in a wet country like Scotland or Wales has its contours rounded and modified by the action of the rain. In a dry country like Colorado or the Spanish plateau the relief is bold and sharp, for the rocks

<sup>1</sup> Sierra da Estrella, Sierra de Gata, Sierra de Grados, Sierra de Guadarrama.

are not subjected to the rounding and softening action of constant rain.

The elevated southern edge of the plateau forms the Sierra Morena, a steep escarpment falling to the River Guadalquivir, clothed with dark coloured evergreen scrub.

*Climate.* The climate of the meseta is peculiarly inclement, and is characterized by a great range of temperature and



**ANNUAL MARCH OF TEMPERATURE**

Fig. 32.

excessive drought. The summers are very hot and dry, while in winter there are long hard frosts and a good deal of snow. What little rain there is occurs mostly in May and November, and spring and autumn are the only growing seasons, for all herbaceous plants perish both in summer and in winter. The climatic extremes are worse in the south than in the north.



the capital, but the government was transferred to Madrid, and since then Madrid has become the chief centre of railways, and of industry. It has of late years developed very large manufactures, tobacco and all sorts of leather goods being the most important.

Valladolid (pop. 78,000) is the natural centre of the Upper Douro basin, and as part of this region is richly agricultural

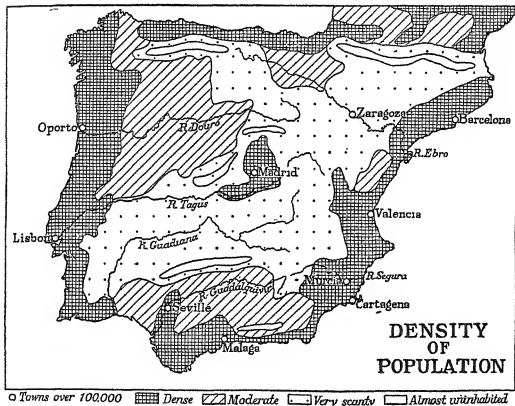


Fig.33.

and particularly noted for its wheat, the town is a large market. It is an important railway junction, and has considerable manufactures.

*Routes.* The principal routes lead in from the coast to Madrid. They follow the river valleys at first, but having reached the upland they avoid them as being too deep and narrow.

The following are the chief railway routes :

- (1) The line from Lisbon to Madrid, which noticeably avoids the cañon of the Tagus (see p. 140).
- (2) The line from Cadiz past Seville to Madrid, which follows the Guadalquivir for a great distance and makes a long détour to avoid the Sierra Morena escarpment.
- (3) The lines from Santander and from Sebastian, following important passes in the Cantabrians and Pyrenees respectively (see p. 139).
- (4) The line from Cartagena past Murcia to Madrid, which has to follow the winding gorge of the Lower Segura.

### The North-western Shoulder (Galicia and Asturias and Portugal.)

*General Character.* This is a hilly region of seaward slopes and deep valleys. The lower slopes of the Cantabrians and the Galician mountains reach down to the sea, leaving no coastal plain. The north coast, which is parallel to the trend of the mountains, is very regular, though there are several small harbours. The western coast-line is transverse to the ridges, and so has deep inlets caused by the river valleys being partly submerged. These inlets are called locally *rias*, and the term *ria-coast* is used by geographers to designate this type of sea-board wherever it occurs, e.g. the west of Brittany. Technically a *ria* differs from a fiord or loch (see p. 42) in that it is a V-shaped opening, wide at the mouth, without ramifications, and with sloping rather than precipitous sides. Also it is usually deepest at the mouth and becomes uniformly shallower inland. It is generally believed that *rias* occur on sunk coasts that have not been glaciated, while fiords are sunk valleys which have been under glacial influence. The *rias* of Galicia make excellent harbours, but they are not great ports because of the exposed and stormy nature of the coast and the mountainous hinterland. They have important sardine fisheries and much small trade.

*Climate and Vegetation.* The climate and products of this north-western region are quite different from those of any other part of Spain. Here the range of temperature is small, the winters mild, and the summers relatively cool and wet.

## TEMPERATURE (Fahr. Degrees).

	<i>Winter.</i>			<i>Spring.</i>			<i>Summer.</i>			<i>Autumn.</i>			<i>Ann.</i>
	D.	J.	F.	M.	A.	M.	J.	J <sup>y</sup> .	A.	S.	O.	N.	
Oviedo.	45	44	47	47	50	54	60	63	63	61	54	50	53

## RAINFALL (inches).

Oviedo.	3.96	2.88	2.84	4.48	3.76	2.76	2.68	2.08	1.64	2.92	3.64	3.76	37.40
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With such a climate the country is green all the year round. The hills are forested with oak, beech, birch, and ash, the lower slopes have orchards of apples, cherries, chestnuts, and walnuts, and the meadows produce crops of maize, rye, potatoes, flax, and hemp. Thus the general vegetation is that of western Europe, not of the Mediterranean.

*Galicia and Asturias.* Galicis is a much poorer province than Asturias, its rocks being almost entirely granitic, whilst Asturias has more fertile old sandstones. Here, cattle breeding is by far the chief industry on land, while 20,000 sardine fishers live on the rias.

Asturias has, moreover, rich coal and iron mines, so that, in spite of its being rather cut off by mountains from the rest of Spain, it is prosperous enough to employ two good sized ports; Bilbao (pop. 150,000) and Santander (pop. 83,000).

*Northern Portugal.* The seaward slopes south of Galicis (i.e. northern Portugal) resemble Galicis except for the curious wine-district of the Douro. Near the mouth of the Douro gorge, for a length of about 30 miles and a width of 5 to 10 miles, the steep cliffs are terraced in tiers and covered with vines. This sheltered spot is one of the richest wine-producing regions in the world, and is very densely peopled.

Oporto (pop. 215,000) has a fine harbour and exports large quantities of wine (port) and also cork bark from the cork-oak forests.



The railways of this whole region are small and unimportant. All four towns above mentioned are connected by very circuitous lines with Madrid, but their vital interests lie seaward and not landward.

### The South-Western Coastal Lowlands Southern Portugal

*General Character.* This region extends from the Sierra da Estrella as far south as the Sierra de Monchique, but does not include the little province of Algarve. It comprises the western edge of the Spanish plateau, and a large expanse of coastal lowland across which run the Tagus and one or two smaller rivers.

The State of Portugal has always had for its eastern boundary a line running approximately along the western edge of the meseta. This line has shifted a little from time to time, but has been broadly speaking a natural regional one.

*Climate.* The climate is on the whole good. The temperature is seldom extreme, and the rainfall is fairly abundant and generally well-distributed throughout nine months of the year. The summer months are very dry, and sometimes the drought is so prolonged as to cause great loss and suffering.

#### TEMPERATURE (Fahr. Degrees).

	<i>Winter.</i>			<i>Spring.</i>			<i>Summer.</i>			<i>Autumn.</i>			
	D.	J.	F.	M.	A.	M.	J.	J <sup>y</sup> .	A.	S.	O.	N.	Ann.
Lisbon.	51	49	52	54	56	61	66	70	70	68	61	56	59

#### RAINFALL (inches).

Lisbon.	4.04	3.72	3.36	3.84	2.80	2.08	0.52	0.16	0.32	1.28	3.08	3.76	29.04
---------	------	------	------	------	------	------	------	------	------	------	------	------	-------

*Vegetation and Crops.* The soil of southern Portugal is in most parts very fertile, though certain parts of the lowlands are too marshy for agriculture. But, in spite of the good climate and rich soil, great stretches of the country are barren scrub-covered wastes, thinly peopled, and used only for grazing large herds of sheep, goats, and pigs. Wherever the ground is cared for it brings forth excellent crops of corn, olives, and

grapes, and it might one day support a large population.

*Towns.* Lisbon (pop. 529,000) is the only big town and the chief port of the region. It has suffered much from earthquakes, and in 1755 was destroyed by one. The Portuguese coast is not rich in practicable harbours, and hence, although Lisbon has only a fairly good natural harbour, the town has become a great port. Wine, oil, and fruit are its chief exports, and it also has a large trade in the sardines and tunny which are fished off the coast.

### The Andalusian Lowlands and Algarve

*General Character.* This region is drained by two great rivers, the Guadiana and the Guadalquivir. These, when they emerge from the mountains, flow over wide and rich flood plains. Near the coast the land is marshy and subject to inundation. The Guadalquivir is navigable for small vessels up to Seville.

*Climate.* For eight months in the year the Andalusian lowlands have an ideal climate, but the heat and drought of the four summer months are such that every green thing in the land perishes. The annual rainfall is very light, but is supplemented by irrigation.

#### TEMPERATURE (Fahr. Degrees).

	<i>Winter.</i>			<i>Spring.</i>			<i>Summer.</i>			<i>Autumn.</i>			
	D.	J.	F.	M.	A.	M.	J.	J.	A.	S.	O.	N.	Ann.
Seville.	53	52	56	59	64	69	78	85	85	78	68	60	67

#### RAINFALL (inches).

Seville.	2.76	2.08	1.88	2.12	1.88	1.72	0.56	0.04	0.16	0.76	1.96	2.44	18.84
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*Products.* In its natural state the land, owing to drought, is a barren heath dotted with tracts of myrtle and mimosa, cork-oak and wild olive. When irrigated and cultivated it is exceedingly productive. Along the coast grow tropical plants such as sugar, bananas, and dates, while oranges, olives, and grapes flourish everywhere. The coastal plains are famous for

their vineyards, and Xeres (Jerez)<sup>1</sup> and Malaga are centres of the wine industry.

The province of Huelva, i.e. the district round about the port of that name, has the richest copper mines in Europe, and these are a source of considerable wealth.

*Towns and Routes.* Seville (pop. 216,000), at the head of navigation on the Guadalquivir, is a large port which collects and sends out the produce of the fertile plain on which it stands. Wines and oranges are its chief exports. It is a railway centre of some importance, being on a main route to Madrid and collecting for export the produce of the surrounding country by means of several small local railways.

Malaga (pop. 159,000) is the second largest port of Spain.<sup>2</sup> It has a beautiful natural harbour, and behind it is an important pass across the mountains into the Guadalquivir plain. It exports iron and lead (see p. 138), wine, oil, and fruit.

Cadiz (pop. 78,000) has a very fine natural harbour, and, standing as it does at the gateway of the Mediterranean, was a town-site in very early days. In the sixteenth century it was the head-quarters of the Spanish treasure fleets, and the wealthiest port of Western Europe. Hence it was frequently raided by English buccaneers, Drake, Howard, and others. In modern times it has fallen out of the race owing to the rise of Seville as a port, and the decline in the sherry trade.

The fortress of Gibraltar is built on a rocky peninsula which partly encloses a wide circular basin or bay to the west of it. Gibraltar has been a free port since 1705, and at one time had a large amount of trade. This has almost disappeared, but its dock-yards have been so much enlarged and improved that they will accommodate a big fleet, and they supply all the wants of the British fleet in the Mediterranean, especially coal.

*Population.* The population of Andalusia, as indeed of all Spain, is so concentrated in the towns that even in a fertile plain there are very few villages and hence few roads. No Spaniard who can possibly help it lives in the country.

<sup>1</sup> Hence 'sherry'.

<sup>2</sup> Barcelona is the first.

Hence the fact that Andalusia has a fair number of large towns does not mean that it is a densely populated region.

### The Southern Folded Ranges

*General Character.* The folded ranges of southern Spain, as has been said, are closely allied to the Atlas Mountains in structure (p. 136) and indeed the whole of southern Spain has a closer geographical affinity with North Africa than it has with the rest of Europe.

The Sierra Nevada is the highest of the many parallel ridges of this region, and its peaks, Mulahacen (11,430 feet) and Valeta (11,400 feet) are the highest in Iberia. The ranges stand in sharp-cut jagged outline against the cloudless skies, their peaks snow-capped, their flanks steep and barren, their passes high and difficult.

Three passes make ways across the barrier. A fairly easy one leads from Malaga to Cordoba, and a main railway line follows it and so connects Malaga with Madrid. A much steeper one behind Almeria is followed by a small railway, also toward Madrid, and the third, behind Motril, has a road but no railway.

*Minerals.* The eastern end of the region is rich in minerals, lead, iron, silver, manganese, and copper, which are mined and exported from the neighbouring ports. Owing to insufficient means of communication the mines are still inadequately worked, but in spite of this the lead produces a large revenue.

*Population and Towns.* The population of so mountainous a country is necessarily small, but in the sheltered valleys, corn, maize, vines, and olives flourish and enable people to live. While the settlements are few and far apart, yet owing to the Spanish dislike of country life and isolated dwellings, such towns and villages as exist are large.

Granada (pop. 108,000) is situated in a narrow valley sheltered from cold winds and protected in old days by fortifications on the hills. Besides being easily fortified, it commands two of

the three passes mentioned above, and for these reasons it was a great Moorish stronghold. Though it has lost its early importance, it is still a centre of population. The city's chief title to fame is the Alhambra, which stands on a hill above the town, and is one of the most marvellous pieces of architecture in the world. It was built as a fortress by the Moors in the fourteenth century, and though it has been defaced and damaged, it is still the most perfect example of Moorish art. Its plain and severe exterior heightens the effect of the splendour within. 'The palace is unsurpassed for the exquisite detail of its marble pillars and arches, its fretted ceilings, and the veil-like transparency of its filigree work in stucco. Sun and wind are freely admitted, and the whole effect is one of the most airy lightness and grace. Blue, red, and a golden yellow, all somewhat faded through lapse of time and exposure, are the colours chiefly used.'

### The Eastern Coastal Lowlands

*General Character.* This region consists of the basin of the lower Ebro (i.e. below Zaragoza) and the coastal plains of the provinces of Catalonia, Valencia, and Murcia. It is at the present day the richest and most productive part of Spain, not because of any unusual natural advantages, but because the long occupation of the industrious and enterprising Moors has left an invaluable legacy in the shape of an efficient system of irrigation.

The surface consists of a series of river valleys separated by high ridges, and edged by a narrow coastal plain. The rivers are not navigable, for even the Ebro can be ascended only for 15 miles by ocean steamers; but their lower valleys form pockets of fertile and sheltered agricultural land, and their scanty waters are used to the utmost for irrigation, water-quarrels among the inhabitants being a standing source of litigation.

*Climate.* The climate is favourable as regards temperature, for though the range is considerable the winters are warm

enough for herbaceous growth to be very little checked. The rainfall is, of course, very scanty, as is always the case on the east coast of mountainous countries whose rain depends on the westerly winds; and if it were not for the irrigation above mentioned, agriculture would be scarcely possible, for here, as elsewhere in Spain, the summer heat and drought are fatal to vegetable growth.

## TEMPERATURE (Fahr. Degrees).

	<i>Winter.</i>			<i>Spring.</i>			<i>Summer.</i>			<i>Autumn.</i>			
	D.	J.	F.	M.	A.	M.	J.	J.	A.	S.	O.	N.	<i>Ann.</i>
Valencia.	50	49	51	53	57	63	69	75	74	70	63	57	61
Barcelona.	48	46	49	51	56	62	68	74	73	69	61	54	59

## RAINFALL (inches).

Valencia.	1.92	1.36	1.24	1.56	1.56	1.72	0.84	0.48	0.36	3.04	3.36	2.00	19.44
Barcelona.	1.72	1.32	1.48	1.76	2.08	1.32	1.36	0.88	1.40	3.44	3.36	1.36	21.48

In regard to the annual rainfall it should of course be remembered that while many parts of the east coast of England get scarcely more than 20 inches, the evaporation in a land of perpetual sunshine and high temperatures is such that the two regions are not in the least comparable.

*Agriculture.* The Ebro basin is a bleak, stony, and treeless moorland except along the river course and in other irrigable spots, where the staple Mediterranean crops and fruits flourish. As a result the population is concentrated in large oasis-like settlements isolated amidst uninhabited wastes. The smaller river valleys—such as the Guadalaviar, Jucar, Segura,—resemble the isolated valleys of western Asia Minor (see p. 89) in that they are gardens of fertility shut off from one another by barren ridges. Every Mediterranean fruit and grain grows in profusion, and the soil is so rich that two or even three crops a year can be taken from the same piece of ground. These basins were irrigated by the Moors, who built long canals and aqueducts of such workmanship that they are still in good condition, and in Valencia and Murcia such irrigated tracts are called *huertas* (gardens).

*Economic Development.* Besides agriculture there is a good deal of mining in this region, especially of rock-salt, and considerable trade is carried on through the many small ports.

Catalonia, though just as fertile as the other eastern provinces, is mainly an industrial region. This is owing to the energy and enterprise of its people who are descendants of ancient Gothic<sup>1</sup> invaders, and differ from the Iberian peoples in that they were energetic northern tribes.

*Towns.* Each of the river valleys has at least one large centre of population, usually a port. Thus we find Cartagena (pop. 96,000), Murcia (pop. 154,000), Alicante (pop. 69,000), Valencia (pop. 269,000), Barcelona (pop. 767,000), and others. It will be noticed that the populations of some of these towns are unexpectedly large. This is due to the fact that they are the outlets of such productive oases, and also to the above-mentioned Spanish custom of concentrating in towns.

Barcelona is the second city of Spain and the largest port. It gets most of the Mediterranean trade of Spain, and, being the centre of the industrial province of Catalonia, has large manufactures and a great export trade. The manufactures are mainly textiles, cottons, laces, woollens, and linen.

*Routes.* In a region of isolated basins each with its own port, the net-work of communications is not likely to be very close. Barcelona, Alicante, and Cartagena have each a road and railway leading as directly as may be across the plateau to Madrid, and the difficulty the railways have in getting up on the plateau is interesting to notice on a good map. A main line runs along the very narrow coastal plain from Valencia to Barcelona, and thence by the famous Col de Perthus round the Pyrenees into France.

## ITALY

*Introduction.* Like the Balkans, Italy is composed of a continental section and a peninsular section. In the case of the Balkans the main mass is continental, and the Grecian

<sup>1</sup> Catalonia = Gothallania.

peninsula is a pendant to it. In the case of Italy the peninsular portion is the larger of the two.

Continental Italy comprises the southern slopes of the Alps and the broad plain of the Po. Peninsular Italy is a long mountain chain with hills and lowlands depending on it.

*General Character.* The broad outlines of relief of the continental section of the country are so simple as to need little general explanation as distinct from the regional treatment. It may be noted that all the long and important tributaries of the Po are from the Alps. The reason for this fact, which has important geographical results, will be dealt with farther on.

The Apennines are an irregular but roughly crescent-shaped range, concave to the Tyrrhennian Sea. Sicily and the Ligurian Mountains form the horns of the crescent (Fig. 34).

The concavity encloses a series of hilly, well-watered and fairly extensive lowlands, with relatively long and complex river systems of which the Arno and the Tiber are the two chief.

The convex edge is bordered by a coastal plain of varying width, interrupted by the large peninsulas of Monte Gargano and Otranto (i.e. Apulia). Across this plain flows a succession of short swift transverse streams, parallel to each other and with a straight course.

Geologically speaking Italy is one of the youngest of the European countries. Unlike Spain, the Balkans and Asia Minor, it has no resistant core of old rock, which is equivalent to saying that it has no broad expanse of barren and thinly peopled upland as have all the other Mediterranean peninsulas. The Alpine slopes and the Calabrian peninsula are mainly of old rock, but the Apennines are of younger limestone (Cretaceous), sands and clays, while the northern plain is of recent alluvium.

The original folding of the Apennines took place at about the same time as that of the Pyrenees, and somewhat later than that of the Alps, but the Apennine ranges do not



resemble the Pyrenees, partly because the latter are of very much older rock, which weathers differently and bears different vegetation from younger rocks. Long after the original



Fig. 34.

folding, the ranges of southern Italy were fractured, tilted, and upheaved by volcanic forces to such an extent as to obscure the original folding and to produce the *block-mountain* type of

relief. When a tract of country is much fractured by earth-movements, great masses or 'blocks' of rock tend to be upheaved, while others subside. Any one who has seen, or seen pictures of, an arctic ice floe, knows how the turbulent water underneath the broken ice heaves up some blocks and crushes others under. This, on an enormously larger scale and with all the movement gradual, ponderous and age-long instead of sudden and cataclysmic, is comparable to what happens when block-mountains are formed. The relief of such a region is not orderly as in folded areas, but chaotic. If the upheaval is recent, the scenery is wild, with jagged cliffs and trough-like valleys.

It should be clearly understood that peninsular Italy is 'young' in two senses. (1) It is composed of young and hence relatively unconsolidated rock. (2) Its relief is due to geologically recent earth-movements. The Alpine slopes of Italy are of old rock but young relief. The comparative youth of the Apennines has various geographical results. The young limestones and sandstones weather quickly; landslides are common; valleys are quickly cut and hence deep and steep-sided; the vast masses of débris carried down by the rivers make broad alluvial tracts of marshland at their mouths, forming fertile land but poor harbours; the southern block-mountain region is still subject to earthquakes, and, as the result of bygone vulcanism has large tracts of fertile volcanic soil<sup>1</sup>; lastly, processes of weathering and erosion have not gone far enough to produce the broad peneplains drained by slow, meandering, navigable rivers such as are found in south-east England or north-west France.

*Climate.* One of the most important differences between continental and peninsular Italy is in climate, for the continental portion lies outside the latitudes where rainless summers and warm rainy winters prevail.

<sup>1</sup> Volcanic rock is of every geological age and of great variety of composition. It is therefore by no means always fertile. When it is very old rock, its soil is usually infertile. But when just sufficiently old to have weathered to some depth, it frequently produces a finely divided soil which retains moisture and is rich in fertilizing chemicals.

In discussing the other Mediterranean countries it has been already frequently noted how relatively small the area is in which a pure type of Mediterranean climate occurs. The chief reason for this is that all the Mediterranean lands are very mountainous, and in mountainous countries there is seldom much uniformity of climate. Every valley has its peculiar conditions, because rainfall and temperature depend on wind, and the winds of a valley depend on the position of the surrounding mountains. Thus a valley may lie directly in the path of a strong and prevailing north-east wind, but if it has a really high mountain wall north of it, it will not suffer from cold gales (cf. Valley of Kazanlik, p. 70).

Continental Italy lies rather to the north of latitudes where Mediterranean conditions would be expected to prevail. Like Central Europe, it has a considerable range of temperature, winters decidedly colder than in Britain, and, on the plains, intensely hot summers. Rain falls all the year round, with spring and autumn maxima.

The climate of the peninsula is of a modified Mediterranean type. The northern part does not suffer from real drought in summer, though its rainfall does show a decided winter maximum (for climatic figures, see pp. 160-78). From the latitude of Rome southwards the absence of rain in the summer becomes more and more pronounced, but the narrowness of the peninsula and the nearness of high mountains to the coast preserve Italy from the extreme dryness characteristic of the summers of North Africa and the Spanish meseta.

### Natural Region

The natural regions of Italy are not so easily delimited as those of Spain or the Atlas, because of the very varied relief. Alpine Italy and the Plain of the Po are obvious natural divisions, and almost equally obvious are the two peninsulas of Apulia and Calabria, and the islands of Sicily and Sardinia. That leaves the main body of the peninsula still to be considered. As will be seen presently, the Northern

Apennines are scarcely a region, but rather a barrier between regions, while the Southern Apennines are very different in relief. The western coast has the little northern strip of Liguria, more generally known to English-speaking people as the Italian Riviera, and then the wide hilly lowlands of Tuscany, Latium, and Campagna, the richest and most important part of Italy after the Plain of the Po. North-east of the Apennines there is a long narrow strip of coastal plain forming another region.

Hence Italy may be divided into natural regions as follows:

- (1) The Alpine Region.
- (2) The Northern Plain.
- (3) The Italian Riviera or Liguria.
- (4) The Western Lowlands.
- (5) The North-east Coast.
- (6) The Southern Apennines.
- (7) Apulia.
- (8) Calabria.
- (9) Sicily.
- (10) Sardinia.

### The Alpine Region

Since the northern and western boundary of Italy is for the most part the Alpine water-parting, the steep descent southward and eastward from the crest is a region of Italy. The Alps as a whole are fully treated in another place (p. 179), so no description of Alpine Italy is needed here. It should, however, be noticed that by the treaty of 1920 the Alpine boundary of Italy was altered so that the basin of the Upper Adige, a district usually known as the Trentino, was transferred from Austria to Italy. The area is of great importance to Italy, because it commands the Brenner Pass (see p. 204).

### The Northern Plain

*General Character.* The Northern plain, commonly called the Plain of Lombardy, is the richest and most densely

populated part of Italy. It consists of two gentle slopes made of debris from the Alps and Apennines. Along the trough where the slopes converge runs the river Po, which has built up a broad flood plain in the trough.

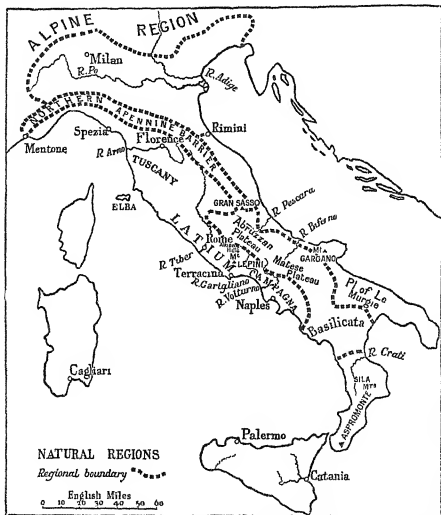


Fig. 35. Natural Regions of Italy.

This lowland is the standard example of what geographers have named a piedmont plain, and something of the method of its formation should be understood.

As the swift Alpine and Apennine streams emerge from the mountains, the slope of their beds decreases rather suddenly, and resulting decrease in swiftness of current causes the rivers

to deposit the heavier débris which they can no longer sweep along. Hence a kind of inland delta is formed, shaped like an obtuse-angled triangle. These deposits are called alluvial fans or alluvial cones. They tend to spread out sideways, and in course of time they have merged into one another and formed an 'apron' of recent unconsolidated material sloping gently to the Po. The name *piedmont* has been given to this type of plain because it is formed at the *foot* of a *mountain* range.<sup>1</sup>

It should be noticed that west of Lake Maggiore the channel of the Po runs close to the foot of the Apennines, while lower down it gets farther and farther away from them. This is because the Alpine rivers west of the River Ticino are so swift that their force tends to push the channel of the main stream southwards. Farther east the Alpine rivers are less swift, for their waters are regulated and filtered by passing through lakes. Thus the short rapid Apennine rivers bring down heavier loads and also flood more easily. Their floods and their heavy deposits push the main stream northwards, and make a wide triangle of very marshy alluvium south of the Po, and only a narrow strip of flood plain north of it.

The current of the Po above Piacenza is strong, and the river is still at the stage of eroding and deepening its channels, but lower down the slope decreases, the current slackens, and the river deposits instead of eroding. Now, with a view to preventing floods, the Italians have embanked the lower Po, and many of its tributaries for hundreds of miles. The rivers, restrained from spreading their loads thinly over the surrounding country, deposit them thickly along their own beds, so that the river bottoms have now risen 2 or 3 feet, or in some cases a great deal more, above the level of the plain. This necessitates raising the embankments periodically, and so the country is gradually becoming covered with broad ramparts on top of which the rivers flow. But the water soaks through these ramparts, and makes the basin of the lower Po almost

<sup>1</sup> Another well-known example of a *piedmont* plain is the Sacramento-Joaquin valley of California.

a swamp.<sup>1</sup> Especially is this the case near and below Ferrara, and here lie the great Italian rice swamps.

The delta of the Po grows very rapidly, because the more the rivers are restrained from flooding, the greater the load they have to deposit at their mouth.

*Climate.* The climate of the plain is one of extremes. In the summer no part of Italy is hotter, not even Sicily, and in winter only the higher mountain areas are colder. The whole region has a January average temperature of 32°-36° Fahr., and a large part of it has from 76°-79° in July.

The rainfall is abundant, and shows the summer maximum usual in continental regions (see pp. 6-8). The annual fall varies from 28 to 48 inches. The following detailed figures illustrate the above facts :

TEMPERATURE (Fahr. Degrees).													
	<i>Winter.</i>			<i>Spring.</i>			<i>Summer.</i>			<i>Autumn.</i>			
	D.	J.	F.	M.	A.	M.	J.	J <sup>y</sup>	A.	S.	O.	N.	<i>Ann.</i>
Milan.	36	32	38	46	55	63	70	75	73	66	56	44	54
Piacenza.	34	31	37	45	55	62	70	75	73	66	55	43	54
Venice.	40	36	41	47	56	63	71	76	75	68	58	47	56

RAINFALL (inches).													
Milan.	3.04	2.48	2.32	2.72	3.48	4.12	3.32	2.84	3.24	3.56	4.80	4.36	40.28
Piacenza.	2.72	2.44	1.92	2.36	3.01	3.20	2.48	2.04	1.44	2.52	4.24	3.20	31.60
Venice.	1.96	1.64	1.56	2.08	2.36	3.08	3.04	2.44	2.48	3.00	3.64	2.72	30.00

*Agriculture.* The type of vegetation on the plain is conditioned chiefly by the winter frosts. Delicate trees such as the olive and orange will not survive. But the bitter winter is short, and the long hot months of sunshine will ripen the vine and any cereal. Irrigation is easy and often used to supplement the rainfall for crops needing much water. Thus maize and wheat are among the chief products, and even a tropical grain like rice does well. The rich wet meadows of the river banks are ideal for cattle, and cheese-making (Gorgonzola, Parmesan, &c.) is an important industry. The abundance of cereals makes poultry very profitable, and quantities of eggs are exported.

<sup>1</sup> Cf. the 'levees' of the Lower Mississippi.

*Manufactures.* But agriculture alone, no matter how flourishing, would not produce the great wealth and dense population of the plain. The two things in the present day that will produce really large towns are (1) special manufacturing facilities, and (2) important trade routes.

As regards manufacturing facilities, the Northern Plain, though without coal, has abundant water-power and a variety of raw materials at hand.

As regards routes, although it is divided from the rest of Europe by a broad mountain belt, yet the Alps are pierced by a considerable number of valleys which have always been practicable, and which modern engineers have utilized for railways. These routes converge from all parts of Europe on the Italian plain.

The manufactures of the plain are silk, wool, and cotton. At the present day part of the raw material for all three has to be imported, but, now as always, sheep are numerous on the Alps and silkworms on the mulberry-covered slopes of the Lake Country. The severe climate of the mountains and the plain has always made wool-weaving important, and cotton has followed, as it nearly always does, where wool has educated the people in the use of spindle and loom.

Italy's raw cotton comes mainly from the United States and India, raw silk from Asia. Cotton and raw silk are two of the chief imports of Italy.

*Towns and Routes.* The towns of the plain (Fig. 36) group themselves mainly in three lines, one along the foot of the Alps, one along the geological boundary between the quaternary deposits of the piedmont plain and the still more recent river alluvium, and the third near, but not at, the foot of the Apennines.

The Alpine line of towns are of the valley-mouth type, trade centres standing where the rivers emerge from the mountains on to the plain. Verona (pop. 151,000) is the only one of more than local importance. It stands on the Adige, commanding the famous route up the Adige valley and over the Brenner



Pass to Innsbrück. It was by this route that for centuries the Venetians sent oriental products from the Levant over the mountains to the famous old towns of Augsburg, Nürnberg, and Regensburg (Ratisbon). This route continues southwards past Modena and Bologna away to Brindisi, and so is one of the great north and south thoroughfares of Europe (cf. Balkan route, pp. 84-5). Thus Verona, standing at a critical strategic point on it, is an important town and fortress; and con-

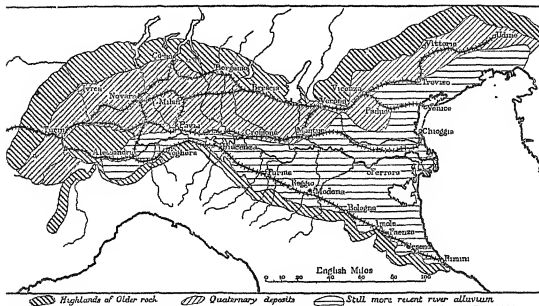


Fig. 36. The three lines of towns of the Northern Plain and their relations to the rock formations.

sequently the east to west railway along the Po valley was brought through the town.

The other valley-mouth towns, e.g. Como, Brescia, Bergamo, are of moderate size and local importance. Each stands on a route across the Alps, has water-power, and manufactures textiles and iron. Brescia collects the trade of two long valleys (Val Camonica and Val Trompia), and has such large manufactures that in population it is rather bigger than Verona.

The next line of towns is that along the edge of the flood-plain of the Po. None of them is actually on the river, though one or two are so close as to appear so on a small map. The

land close to the river is too soft and marshy for roads or railways, and as the river is not seriously navigable, they are built on the firmer soil just off the flood plain. Here runs a high road, and on it stand the towns. They have no water-power, and hence no important manufactures. They are prosperous market towns with populations of thirty or forty thousand. Padua (pop. 125,000) is an exception. The railways from Florence and from Milan converge on it and the line continues to Trieste and Vienna. This, and the old famous university, have made it an important and growing centre.

The third line of towns, near the foot of the Apennines, has the advantages of both the other lines, but in a smaller degree. Parma, Piacenza, Reggio, and Modena are towns of from fifty to eighty thousand inhabitants. They have water-power, and manufacture silk, felt, straw-hats from the abundant straw to be had in a cereal-growing region, and pottery and tiles from local clay. They are agricultural centres for the surrounding district, and are situated on the important railway which follows the line of the Emilian Way and leads into South Italy. They are not markedly of the valley-mouth type of towns, because the hill region behind them is undeveloped and thinly peopled. Bologna (pop. 245,000) is much larger than the others of this group because it commands the Reno Valley route across the Apennines to Florence and to Rome.

The great towns of Turin, Milan, and Venice cannot be classified with any of the preceding groups. Each has its own individuality of situation and importance.

Turin (pop. 591,000) is a gap town and route centre, which, owing to its strategic position, has been important since Roman times. It stands at the confluence of the Po and the Dora Riparia, in a gap about 10 miles wide between the Alps and the Monferrato escarpment. It commands one of the two chief gateways<sup>1</sup> from Italy into France, viz., the Mont Cenis route to Lyon and thence to Paris. The traffic formerly went up the Dora Riparia valley and over the Mont Cenis pass, but

<sup>1</sup> The other is the Simplon.

the railway goes through the Cenis tunnel, some 15 miles south-west of the pass. All the chief Italian railways, from Brindisi, from Venice, from Naples and Rome, and from Genoa, meet at Turin on the way to Paris (p. 195).

The situation of Milan (pop. 961,000) is a great contrast to that of Turin, for it has few obvious advantages. The town stands in the midst of a fertile but marshy lowland near a little

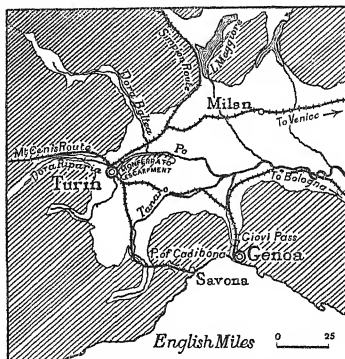


Fig. 37. The position of Turin and Genoa.

stream, and might well have remained a small market town like a hundred others. But it is obvious that there was likely to grow up some one centre where all the routes of the Central Alps might converge, and Milan became that centre. It is a fairly obvious meeting-place for the Simplon and St. Gotthard roads and railways, and the lines from Turin, Bologna, and Venice have been constructed to converge on it. By an elaborate system of dams and barrage Milan has been provided with a very powerful head of water, and it is now by far the largest manufacturing town of Italy. It weaves more silk than

Lyon, is the head of the Italian cotton industry, and is celebrated for the large machinery which it makes.

Venice (pop. 258,000) owes its importance largely to the fact that the band of refugees who founded it were people of energy and enterprise. Having in desperation overcome the difficulties of building a settlement on such a site, they turned their attention to their only possible means of livelihood, namely trading, and they made a good thing of it. They managed to capture the rich trade of the Levant and later of India, and sent it across the Alps by the Brenner route into Central Europe. The discovery of the sea-route to India robbed the town of its greatest advantage, and it is at the present day a port of local rather than world importance, but it still retains the artistic skill and taste which its early traffic in luxuries gave it.<sup>1</sup>

The town of Trieste (pop. 255,000) was, until 1920, the chief sea-port of Austria. It is beautifully situated on limestone terraces at the foot of the Karst hills, and behind it are gaps in the highlands by which roads lead into the interior. Its harbour is much better than that of Venice, and this, together with the commercial enterprise of the Austrians, has enabled it to eclipse Venice. During the present century its harbour has been enlarged, its railway communications with the interior much improved, and its trade increased by the opening of new shipping lines with all parts of the world. As a result the population has almost doubled since 1900.

The cession of Trieste to Italy has left Austria without a port (see pp. 273-4).

## The Northern Apennine Barrier

As has already been suggested (p. 157) the northern and southern Apennines differ a good deal in structure and in scenery, the former being a simple folded region, and the

<sup>1</sup> A full account of the geographical development of Venice is given in Herbertson's *Man and His Work*. The opening of the Suez Canal brought back some of the eastern trade to Venice.

latter, i. e. the part south of the Gran Sasso, of a complicated block-mountain type.

The Northern Apennines are so relatively undeveloped and unpeopled that they are scarcely a geographical region, but act more as a wall or barrier between the Northern Plain and the Tyrrhenian coast region. They consist of a series of ridges which blend into each other, forming a continuous water-parting from which extend numerous lateral ridges and valleys. A fish's backbone distorted by a lateral curvature would make a diagrammatic representation of the general effect, especially as the lateral ridges are low and insignificant, while the central ridge averages about 5,000 feet.

### The Italian Riviera

*General Character.* Where the coast line of Italy curves to form the Gulf of Genoa, the Apennine barrier ridge comes so close to the sea that the waves beat against the ends of the lateral ridges just mentioned. This narrow strip of rugged coast between Spezia and Mentone has certain peculiar advantages which make it a densely peopled and individual small region.

The Italian Riviera, or, to give it its Italian name, Liguria, consists then of a series of deep sheltered valleys ending in coves cut off from each other by promontories. Its two chief assets are its climate and picturesque scenery.

*Climate.* The valleys are protected by the Apennine ridge from all north and north-east winds so that they have mild and pleasant winters, while the northerly latitude and sea-breezes combine to give reasonably cool summers. The rainfall is abundant, Genoa having an annual average of 49.8 inches, with an autumn maximum and a decided summer minimum.

*Occupations.* In such a climate olives, oranges, palms and all the natural and cultivated plants of southern Italy will grow, so every possible bit of ground is utilized, and the whole coast is thickly peopled with an energetic race of terrace-gardeners and fishermen.

*Towns and Routes.* The towns and chief villages avoid the valuable and rich valley bottoms, and are built picturesquely on the promontories and hill sides. Such a region, of course, possesses great attractions for tourists, and the tourist trade is a source of wealth.

The railway from Marseille has been continued with much difficulty, and many tunnels along the coast to Tuscany and so on to Rome, and is an important trade route.

Genoa (pop. 623,000) is situated where two passes lead across on to the northern plain (see Fig. 37, p. 164). By these the port is connected with Turin and Milan, and so with the St. Gotthard and Cenis routes. Thus it is the outlet for the industries of Piedmont and Lombardy, for Liguria, and also for some of the trans-Alpine regions of Switzerland. It also possesses the whole of Italy's transatlantic trade, and is the second port of the country.

## The Western Lowlands

### Tuscany, Latium, and Campagna

*General Character.* The long, narrow stretch of broken country which extends from Spezia to a little beyond Naples is the second rich and populous region of Italy. In all except wealth it presents a great contrast to the monotonous northern plain. Its relief is complex and varied. Ranges of low hills, such as those round Siena and Mount Amiata, are separated by gorges which widen into broad valleys and push out seaward as marshy coastal plains. All the main rivers, such as the Tiber, the Arno, the Volturno, have longitudinal upper courses and then turn at a sharp angle and cut through successive ridges to the sea. Where they cut the ridges they run through narrow gorges, but between the ridges, the valleys spread out into fertile sheltered plains. On one of these, Florence stands. Since the ridges run parallel to the coast, they would be serious barriers to development but for the routes formed by these transverse valleys.

The hills of Tuscany are formed partly of small outcrops of old hard granite rock, and partly of detached masses of the Apennine limestone and sandstone. The province of Latium, also the country round Naples, consists of almost unbroken stretches of eruptive rock, dotted with many crater lakes.<sup>1</sup> The coastal plains are marshy alluvium, largely uninhabitable, and the lack of good harbours is a drawback.

*Climate.* This region is fairly uniform in climate, the coldest month averaging well above 40° F. The summers are hot, but the heat is tempered by the sea. As regards rainfall, Tuscany gets a good deal more than the other districts, partly because it is on the outskirts of the belt of summer drought, and partly because it is hilly. The rainfall tends to diminish as one goes south, but is more plentiful wherever the hills come down close to the sea. Except in Tuscany there is a decided winter maximum. Although the figures given below show that Rome and Naples get some rain in the summer, in point of fact it all falls in a few violent storms,<sup>2</sup> with long weeks of drought between.

TEMPERATURE (Fahr. Degrees).													
	<i>Winter.</i>			<i>Spring.</i>			<i>Summer.</i>			<i>Autumn.</i>			
	D.	J.	F.	M.	A.	M.	J.	J <sup>y</sup> .	A.	S.	O.	N.	<i>Ann.</i>
Florence.	43	41	43	49	56	63	71	76	75	68	59	49	58
Rome.	46	44	46	51	57	64	71	77	76	70	62	52	60
Naples.	49	47	48	51	57	64	70	76	75	70	63	55	60

RAINFALL (inches).

Florence.	3.32	2.76	2.52	3.00	3.12	3.08	2.16	1.40	2.08	3.36	4.36	4.40	35.56
Rome.	3.64	3.16	2.48	2.72	2.60	2.24	1.56	0.68	1.08	2.92	4.60	4.44	33.12
Naples.	4.40	3.56	2.84	2.92	2.64	2.00	1.32	0.60	1.12	2.84	4.44	4.60	33.28

*Distribution of Population.* The distribution of population in the western lowlands is very curious (Fig. 38). The whole coastal lowland, from the latitude of Elba as far south as the town of Terracina is very sparsely peopled, the Roman Campagna being almost uninhabited. But the Arno basin,

<sup>1</sup> i. e. lakes occupying the circular craters of extinct volcanoes.

<sup>2</sup> Violent rainstorms in a hilly country are of relatively small value to agriculture, because of the rapid run-off. Moreover they wash down the soil and lay bare the slopes.

the valley of the upper Tiber, and the province of Campagna (not to be confused with the Roman Campagna) are as densely populated as the valley of the lower Thames or Rhineland. The reason for this is that the coastal lowlands are not only marshy, but are so malarial as to be almost

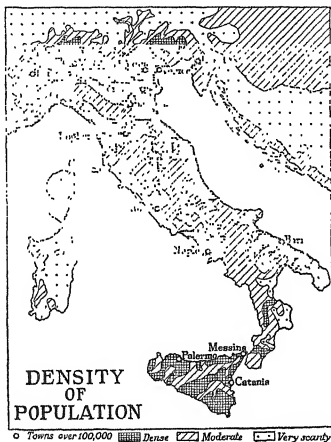


Fig. 38.

uninhabitable, while the populous areas lie where a good climate and a very rich soil have led to intensive cultivation, and where water-power and other local facilities have made manufacturing and trade important.

As the three provinces of Tuscany, Latium, and Campagna are to some extent natural subdivisions, as well as being political ones, it will make for clearness to discuss the western lowlands under these headings.



*Tuscany: General Character.* Tuscany consists of the Arno basin, some small but important spurs of the Apennines to the north of it, and the Siennese hill region to the south. The district is a limestone one, but vulcanism has given rise to large deposits of valuable rocks such as serpentine and marble.<sup>1</sup> The marble quarries of Carrara are the largest and

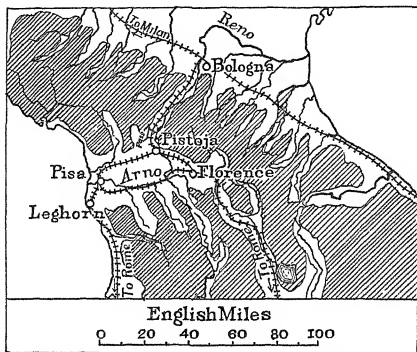


Fig. 39. Florence. In a fertile basin protected by hills and commanding important routes.

most famous in the world. They extend over an area of eighty square miles, and the finest quality of white marble is obtained from them. Besides being a source of wealth, this stone has been one important factor in the development of the sculptor's art in Italy.

*The Arno Basin* is an undulating lowland, well watered, well drained, and surrounded by sheltering mountains. Productive vineyards, olive groves, mulberry plantations, and rich meadows cover the whole country-side.

<sup>1</sup> Marble is limestone metamorphosed by great heat and pressure.

*Towns.* The chief towns of the lower Arno stand well away from the swampy valley, e. g. Lucca, Pistoja.

Florence (pop. 269,000) is on the river where it emerges from its last gorge, at the lowest point where the ground of the flood-plain is solid enough for bridges. It is, therefore, a route centre, and eight high roads and three important railways converge on it. That it has always been an art-centre and the home of artistic treasures is probably due, first, to the wealth of its people, and second, to its being defended from attack by marshes and high hills. It should be remembered that until recent times Italy was not one kingdom, but divided among petty princes, who, if their principality was rich enough to yield big revenues, could spend enormous sums on art treasures.

Pisa (pop. 77,000) in Roman times was the port of Tuscany, but the harbour became silted up with river deposits, and Leghorn (Livorno) (pop. 129,000) is the present outlet (cf. Avignon and Marseille, p. 299). Leghorn suffered like Venice from the discovery of the sea-route to India, and has at present no world importance though much local trade.

*The Hills of Southern Tuscany.* South of the Arno lowland is a hilly region drained by the River Ombrone. There are volcanic hills such as Monte Amiata which resemble the Puy of France (p. 287), but the district is mainly a limestone one, comprising moist and fertile valleys, gentle slopes covered with vineyards, and grey limestone cliffs fringed with olive trees. The Ombrone brings down so much débris that a marshy coastal plain, the Maremma, has been formed. This used to be a byword for its malaria, but has been extensively drained, built up, and reclaimed.

The hills have always produced a good deal of copper, silver, and lead, and Etruscan alabaster is famous all over the world.

*Towns.* Siena stands on a hill between two marshy depressions. In the Middle Ages it was the fortified centre of a very wealthy little republic. Hence the magnificent cathedral and art treasures for which it is famous. It is still

an important town, has a university, and manufactures the local raw materials, making woollens, silk, straw-plait, and pottery. The making of pottery and tiles from the clay of the hill of Siena is an old and famous industry.

Volterra is an old Etruscan<sup>1</sup> fortress built on an easily defended height. Its colossal walls bear witness to its former size. It is now important for the fine quality of alabaster found near it.

*Latium: General Character.* Latium consists of the Roman Campagna, with the hilly country of the Upper Tiber and Upper Garigliano behind it.

The Roman Campagna is, as has been said, an almost uninhabited region to-day. It was once a richly cultivated plain, but is now poor grass-land inhabited by shepherds. It assumes in places beautiful undulating forms rather like chalk downs, and in spring it is famous for its wild flowers.

Travelling inland from the Campagna one enters a region of limestone hills and sheltered longitudinal valleys. This region has a Karst-like appearance (see p. 73) with dry flat uplands and well-watered depressions. Forests of oak and chestnut clothe the upper slopes, on the terraced lower slopes grow vines and olives, and in the valleys wheat, tobacco, figs, and oranges. The Alban Hills and the Mount Lepini district are very productive lands of this type.

*Rome.* The site of Rome (pop. 914,000) resembles that of Athens (p. 83), and Paris (p. 316), in having all the special characteristics which the ancient town builders considered essential for a great town, viz., heights for its defence, hills for its temples, deep waters for its shipping, and open spaces for its markets and congregating places. The 'seven hills' are not very high or formidable, but the Capitol used to be protected by marshes, as was also Janiculum across the river. The Tiber, useless now, was an efficient water-way in early Roman days, and its flood-plains, e. g. Campus Martius, were suitable for public gatherings, markets, &c.

<sup>1</sup> Tuscany with Umbria formed ancient Etruria.

At the present day Rome is an important route centre. A coastal road and railway connect it with Genoa ; a line runs up the Tiber valley and down the Arno to Florence and so across the Apennines by the Reno valley to Bologna ; and another line follows the famous old Appian Way by the Garigliano valley to Naples.

In the Middle Ages ancient Rome became deserted, and the modern town is on the other side of the river. The city has always kept its hold on the imagination of the people, and is still the heart of peninsular Italy, the political and ecclesiastical capital and the chief centre of art and learning.

*Campagna: General Character.* Beyond the limestone hills of Lepini comes a broad area of volcanic and limestone rock, forming the rich and densely populated province of which Naples is the nucleus. It consists of the broad plains of the lower Volturno, and a hilly region behind, where the heights are cretaceous limestone and the valleys are filled with volcanic ash. In the south-east the Volturno plain is broken by Mount Vesuvius and by the high ground of the Phlegraean Fields on the slope of which Naples stands.

The whole region is proverbial for its fertility. Warm and sheltered, with mild winters and with intensely productive volcanic soil, nature fails it in only one respect ; and the ingenuity of man has supplied the one lack, for the dryness of the Campanian summers is neutralized by a complete system of irrigation.

*Naples.* Naples (pop. 966,000) is the largest town and chief port of Italy. Being the centre of such a rich district, and having a wonderful natural harbour, it soon rose to importance, and though it is not a natural route centre it has attracted to itself all the great roads of southern Italy. Its trade is large, the characteristic exports being, of course, wine, oil, and silk. It imports the great staples which Italy lacks, viz., corn, cotton, coal, and iron. Because it imports so much coal, it has developed some manufactures, e.g. cotton, macaroni, the factories standing close to the harbour.

## The North-East Coast

*General Character.* From Rimini south-east to about latitude  $42^{\circ}$  N. there is a narrow coastal region, which, in that it is the other side of the Apennine 'fish-bone', (see p. 166) should resemble the Italian Riviera. In point of fact the resemblance is very slight, for the ridges are much lower and the intervening valleys much wider, so that the scenery is not so impressive. The climate, moreover, is not so favourable as on the west coast, the winters being rather colder, the summers a little hotter, and the rainfall less. The coldness of the winters is due partly to the region being less sheltered from the north-east winds, and cut off from the warmer westerlies by the Apennines. This difference in climate, however, is not sufficient to make any great difference in vegetation.

The actual sea-coast is barren. The little coastal towns are fishing centres. Further inland the low hills and the valleys are very carefully cultivated with hemp, flax, vines, olives, and mulberries. The higher ground is good pasture, and cattle and sheep are so numerous that hides, wool, and gut are important exports. The trade goes through the valley-mouth towns, e.g. Ascoli, Macerata, to the one large port of Ancona, a town of 69,000 people.

## The Southern Apennines

*General Character.* The Apennines south of the Gran Sasso, as has been said, are very different from the northern barrier ridge (see p. 155). Here earth-movements have broken the cretaceous limestone into broad, flat-topped blocks with steep scarp faces. The largest of these is the Abruzzan plateau, between the Gran Sasso and the deep gorge of the upper Garigliano.<sup>1</sup> Pendant to it is the smaller Matese plateau.

*Occupations.* Though the scenery here is wild and beautiful, with deep gorges and jagged limestone cliffs, the thin dry

<sup>1</sup> Often called the River Liri.

limestone soil and the difficulties of transport make it a very poor and thinly peopled country. Grapes and olives will not grow here, and rye and oats are the chief crops. The inhabitants, from long isolation, are uncivilized and illiterate. They are of two classes, shepherds, and small farmers. The shepherds tend their enormous flocks in summer on the hill-tops, but in the winter they migrate with their herds to the Tavoliere (chess-board) of Apulia, the curiously flat plain behind Monte Gargano, where they have had from time immemorial rights of pasture.

*Settlement.* The settlements are either tightly-packed little villages clinging to the hillsides, or small towns, such as Aquila (pop. 55,000) and Sulmona, in the gorges where there is access to the coast.

*Communications.* The southern Apennine region, considering its population, is pretty well supplied with railways. These have to follow the river valleys, and are therefore not very direct. A line from Rome follows up a tributary of the Tiber, crosses the Abruzzan plateau, and descends to the east coast by the Pescara valley. Other lines connect Naples with Foggia, and with Potenza.

*Emigration.* It is from this barren part of Italy that large numbers of emigrants go every year to America. Like most mountain folk, they have a romantic devotion to their home, and nearly always return when they have scraped together a little money.

## Apulia

*General Character.* South of the river Biferno (latitude 42° N.) the Apennines recede from the coast, and there is a fairly extensive lowland interrupted by Monte Gargano, and broken by the low plateau of Le Murgie, (i. e. the upland which lies between the river Ofanto and the Gulf of Taranto).

This whole region is of the same limestone structure as the Dalmatian coast across the Adriatic, and it was, no doubt, in recent geological times separated from the Apennines by

straits. Its relief is therefore of the karst type (see p. 73), with flat-topped parched table-lands and deep *dolines* or *polyen* probably formed by solution of the limestone. The *dolines* are very fertile in the dry season, but usually become lakes or marshes in the winter. As a result of the limestone formation the country has scarcely any surface streams, the Ofanto being the only large river.

*Climate.* The climate of Apulia is one of extremes. The winter temperatures are not very low, but the north and north-east winds which prevail in winter make that season a cold one. In the spring late frosts and snowfall are not uncommon, in the summer the heat and dryness are intense, and the autumn is characterized by violent rain storms.

	TEMPERATURE (Fahr. Degrees).											
	<i>Winter.</i>			<i>Spring.</i>			<i>Summer.</i>			<i>Autumn.</i>		
	D.	J.	F.	M.	A.	M.	J.	J <sup>r</sup> .	A.	S.	O.	M.
Foggia.	46	43	45	50	56	46	73	79	78	72	63	52
	Ann.											
	60											

	RAINFALL (inches).											
	D.	J.	F.	M.	A.	M.	J.	J <sup>r</sup> .	A.	S.	O.	M.
Foggia.	1.76	2.08	1.12	1.32	1.64	1.80	1.20	0.60	1.24	1.44	2.08	2.32
	18.58											

*Agriculture.* In some parts the uplands are covered with coarse grass, and the upper slopes of the hills with forests of beech and oak, but the lower slopes and plains are rich agricultural land, and here splendid boundless cornfields cover the ground, which, green in winter and already yellow in spring, is bare, brown, parched with the heat and terribly dusty at mid-summer. The hills of Le Murgie are covered with vineyards and luxuriant olive plantations.

Want of water is the chief drawback in Apulia, and if capital could be raised to irrigate it thoroughly it would be one of the richest parts of Italy.

*Towns and Routes.* Between the river Ofanto and Brindisi a series of small ports have collectively a good deal of trade, and this is the most densely populated tract in the province.

Brindisi (pop. 41,000) is the largest of these ports, because it is a terminus of the overland route from Europe to the East,

and also a port of call for mail-boats. A railway runs from Brindisi through the gap at Potenza to Naples, and it is the terminus of the main line along the coastal plain from Bologna.

The inland towns are small cross-road settlements. Foggia (pop. 91,000), on the coastal railway, sends off a branch line across the mountains to Naples, and is therefore much larger than the others.

## Calabria

*General Character.* The so-called Calabrian 'Apennines' are in structure and scenery no more part of the Apennines than Dartmoor and Exmoor are part of the Pennines. The Apennines end abruptly at the depression now occupied by the river Crati (see Fig. 34, p. 154), and the Calabrian Mountains consist of several masses of very old and hard granite and gneiss lapped about with deposits left by recent seas and straits. The recent deposits form low plains, and across them the rivers flow down from the rounded granite bosses. The two largest of these uplands are Le Sila and Aspromonte. Their highest parts are between 6,000 and 7,000 feet. Here the snow lies till April or May and the ground is thickly forested with cold-temperate trees such as beech and fir. But in the marshy lowlands the heat is intense, and oranges, vines, tobacco, licorice, and even cotton grow abundantly.

*Population and Routes.* High roads and railways run round the coastal plain of the peninsula, and cross it by the depressions between the uplands. The uplands themselves, like most granitic masses, are sparsely peopled and crossed only by rough tracks. The lowlands support a dense population, and each has its little town. There are no large harbours or ports.

## Sicily

*General Character.* Sicily is a mountainous island rising steeply from the Tyrrhenian Sea on the north, and sloping gently towards the Mediterranean on the south. Like most



of Italy, but unlike adjacent Calabria, its rocks are geologically speaking young, and its soil is very fertile. Its separation from the mainland occurred in recent geological time, and Mount Etna bears witness to the volcanic disturbances which caused the rift. Etna rises so gradually to its height of 10,865 feet, that the area of its base is several hundreds of square miles in extent, thus giving a great expanse of well-drained fertile volcanic soil.

*Climate.* The climate of Sicily is of a pure Mediterranean type, the winter being warm and wet, the summers very hot and very dry. The annual rainfall of 20-30 inches is fairly adequate, especially as the prevailing rock is not very absorbent. In the following figures the very high mean annual temperature should be noted.

TEMPERATURE (Fahr. Degrees).												
	<i>Winter.</i>			<i>Spring.</i>			<i>Summer.</i>			<i>Autumn.</i>		
	D.	J.	F.	M.	A.	M.	J.	J <sup>y</sup> .	A.	S.	O.	N.
Palermo.	53	50	52	55	59	64	71	76	77	73	67	59
Catania.	54	51	52	56	60	66	74	79	79	76	69	65

RAINFALL (inches).													
Palermo.	4.60	4.16	3.12	3.24	2.68	1.36	0.60	0.32	0.56	1.52	4.04	4.04	30.24
Catania.	3.32	2.28	2.04	1.36	0.68	0.28	0.08	0.36	1.24	2.64	3.60	3.44	21.32

*Vegetation and Agriculture.* As regards natural vegetation, the island is now to its great detriment completely deforested. It is, however, highly cultivated, wheat being the chief cereal. Olives are grown, but oranges, wine, and sulphur, the latter mined in the south and east, are the chief articles of commerce.

*Towns.* Sicily is densely peopled, but it has from time immemorial been devastated by war, pestilence, famine, and earthquakes, and large numbers of the people live in uttermost destitution. The two centres of population are the towns of Palermo (pop. 447,000) and Catania (pop. 281,000). Palermo stands at the mouth of a very fertile valley, and has a fine harbour. Catania is at the foot of Mount Etna, and so is the outlet for another peculiarly fertile region. Both towns owe

their size partly to the fact that they are in the least malarial parts of the island, which, as a whole, suffers severely from that pestilence.

## Sardinia

*General Character.* Sardinia consists of two highland masses of old, hard rock, mainly granitic, divided by a lowland extending north and south from Sassari to Cagliari, and composed of recent unconsolidated deposits. The island presents a great contrast to Sicily, for while the latter is one of the most densely populated parts of Europe, the former is very scantily peopled. The difference is largely due to the oft-repeated fact that granitic uplands repel population because of their exposed and infertile surfaces. The Sardinian lowland, though very fertile, is infested with malaria.

The climate of the lower parts is similar to that of Rome and Naples, but on the uplands snow and frosts are frequent.

*Occupations.* Agriculture and fishing are the chief industries. Wheat is the chief crop, but methods of cultivation are primitive and the yield small. Wine and olive-oil are the other important products.

*Towns.* The coast has many fine harbours, but the trade of the country is not sufficient to make them large ports.

Cagliari (pop. 94,000) has an excellent harbour, and is the chief centre of trade and of population. The railways of the island converge on it.

## VI

### MOUNTAINOUS CENTRAL EUROPE

ALPINE AND CARPATHIAN LANDS:—SWITZERLAND, AUSTRIA,  
HUNGARY, SOUTHERN PART OF CZECHOSLOVAKIA,  
TRANSYLVANIA (PART OF ROMANIA)

*General Character.* The mountains of Central Europe form two great systems—the Alps and the Carpathians—separated only by a narrow break, consisting of a small basin

of lowland through which the river Danube passes. This basin is very important, providing an easy way through the mountain barrier that rises between northern and southern Europe, and it will be considered especially later. The Alps to the west of this break stretch for a distance of 750 miles, in a wide curve shutting in the north Italian plain to the south (see p. 157). The Carpathians to the east, curve in a semicircle 1,000 miles long, and join the north-western end of the Balkan mountains (see pp. 57 and 62). Thus the Alps and Carpathians with the mountains of the Balkan peninsula form a circle and entirely enclose the low plain drained by the middle Danube.

The width of the mountains varies considerably. The Alps at the western end are not very wide, about 30 miles, and consist of one main chain with many branching spurs. Here the main axis runs nearly north and south, and as it curves round and takes an east-to-west direction the mountain system widens slightly and forms two parallel ridges separated by a deep flat-bottomed valley drained by the upper Rhone and the upper Rhine. Still farther east the highland widens much more and is not nearly so high. At its widest it is 200 miles from north to south. Here three well-marked parallel ridges are formed which finally branch into five on the edge of the plain of the Danube. Each ridge is divided from the next by a deep and narrow valley drained by rivers flowing to the Danube. According to their physical features, then, the Alps may be divided into three sub-regions: the western, the simplest, having one main chain; the central with two parallel main chains, and the eastern division with three ridges at first, increasing to five (see Fig. 40). The western and central divisions being much higher than the east have more snow and ice. Comparatively little of the eastern Alps is above the snow line.

The Carpathians like the eastern Alps are not high enough to have perpetual snow peaks and glaciers. They are generally speaking narrower than the Alps, but at either end they widen out and form broad masses of mountainous coun-

try. These are the region of the High Tatra at the northern end and the Transylvanian region at the southern end. These are connected by a narrow belt only 10 miles wide in parts, and of much lower elevation. There are three divisions of the Carpathians, then, just as there are three divisions of the Alps. In contrast to these mountain regions is the low, enclosed

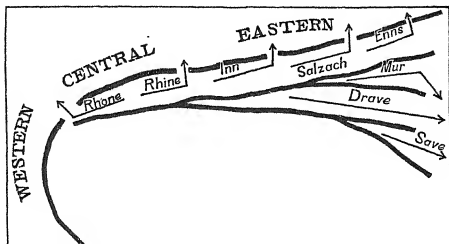


Fig. 40. Diagrammatic sketch of the Alps, showing the lines of the main ridges.

plain of the middle Danube, forming a completely different kind of natural region (see Fig. 41).

*Structure.* Although the Alps and Carpathians were upheaved and folded into mountains during the same geological period, the Tertiary period, the rocks at the surface now are not the same in the two systems. The Alps were pressed up much higher than the Carpathians and were thus more exposed to the forces of the atmosphere, and in consequence more has been worn off them by erosion and the older rock underneath uncovered. The mass of the Alps is now formed of old Archaean rock which extends in a wide belt all the way from east to west. This is bordered on the north and eastern half of the south by a narrower belt of Secondary Limestone. This belt was once continuous on the south as well as in the north but it has disappeared west of lake Maggiore. There were disturbances of the earth's surface in this region which

caused the outer belt of rock to break off gradually and fall away from the main mass, and it has now been buried under the newer deposits of the Italian plain. This is the reason why the western Alps are not so wide as the eastern Alps. In the Carpathians very little Archaean rock has been exposed, and the mountains are chiefly formed of Secondary and Tertiary limestones and sandstones. The low-lying plain of

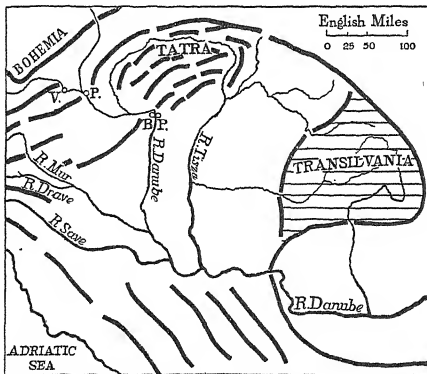


Fig. 41. Diagrammatic map of the Carpathians and the plain of the Danube.

the Danube has been formed by the immense amount of débris brought down by the many rivers from the surrounding mountains which all discharge their waters into it. Thus the region is entirely covered by a fine alluvial soil.

On the northern side of both Alps and Carpathians there is a relatively level plateau of much lower elevation that is known as a foreland, a sort of step leading up to the mountain region. These forelands, like the plain of the Danube, are covered with débris washed down from the mountains. The

Carpathian Foreland, forming part of Poland and Rumania, has already been studied (pp. 33-8). The foreland of the Alps is shut in on the north by a belt of limestone heights known as the Jura<sup>1</sup> (see Fig. 50). This limestone is folded into mountains in the south but forms a high unfolded tableland in the north. These two parts of the Jura are separated from each other by the valley of the Rhine between Lake Constance

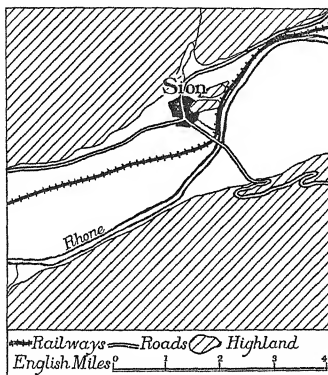


Fig. 42. A longitudinal valley with wide floor and a town in it.

and Basel while the lake itself divides the foreland into two sections. The northern part both of foreland and Jura belong to Germany, while the southern sections form part of Switzerland.

*Alpine Valleys.* Mention has been made hitherto only of those Alpine valleys that run between the ridges and are known as 'longitudinal' valleys. They make movement easy

<sup>1</sup> It is from this region that the name Jurassic comes which is given to this kind of limestone wherever it is found, e. g. in the Cotswolds.

from east to west *along* the highland. There is another set of shorter valleys at right angles to them cut by the rivers that drain the mountains to north and south. These are known as transverse valleys and help to make movement possible *across* the highlands.

Marked characteristics of nearly all the Alpine valleys are their wide flat bottoms, seeming much too large for the rivers that wind about in the centre of them, and the steep sides like the walls of the Scandinavian fiords though not so high. A section across such a valley is like a U ; hence they are called

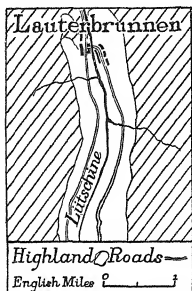


Fig. 43. A transverse valley with a narrow floor and a village in it.

U-shaped valleys. The Rhone is a good example of a large U-shaped valley on whose wide flat floor good-sized towns have grown up (Sion, Chur, &c.) (see Fig. 42) and the Aare and Lutschine of smaller transverse valleys with merely villages of fair size in them (Meiringen, Lauterbrunnen) (see Fig. 43). As in the case of Scandinavia the shaping of the valleys has been partly the work of ice at a time when the glaciers of the Alps were much larger than at the present day and came

right down the valleys. When a valley is cut out by water only, it is much narrower at the bottom than it is at the top, and the sides are more sloping, so that its section is like a V in shape. There are many other features of the Alpine valleys that are the result of the large glaciers of the past. In many cases when the ice melted the floors of the side valleys were left at a much higher level than the main valleys, and the rivers had to make a great fall to pass from one to the other. The tributary valleys of this kind, whose floors do not join those of the main stream, are called 'hanging

valleys'. Their waterfalls are of great importance to the Alpine peoples because they supply a large amount of water-power and the finest of them attract crowds of visitors to the neighbourhood.

At the foot of nearly every important Alpine valley is a large lake, while many smaller lakes have been formed higher up in the mountains. The larger valley-bottom lakes were formed originally by earth movements which blocked up the valleys but usually they have been enlarged by the terminal

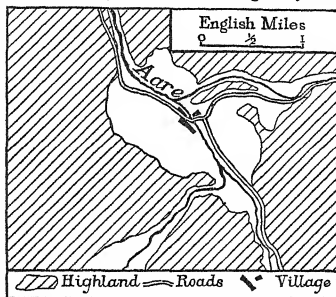


Fig. 44. An old glacial lake basin-site of the village of Innertkirchen. There is no room for a village in the narrow valley above and below the basin.

moraines of the glaciers which form considerable hills at the ends of the lakes and still further dammed up the valleys when the melting began. The chief of these lakes on the northern edge of the high Alps are Geneva, Thun, Brienz, Lucerne, Zurich and Constance, and on the southern side Maggiore, Lugano, Como, and Garda. The higher smaller lakes that are to be found near the tops of the passes either occupy rock basins or have been dammed by moraines. In some cases the lake was only temporary, the water having later cut an outlet through the obstructing moraine and drained away, when a small fertile basin of level land was uncovered which is now



cultivated and in which a village has grown up. The village of Innertkirchen in the Aare valley, just above the famous gorge of the river where it cuts through a rock obstruction, occupies such an old lake floor (see Fig. 44).

TABLE I. SHOWING DIFFERENCES IN SUN AND SHADE TEMPERATURE AT SUCCESSIVE ELEVATIONS.

<i>Station.</i>	<i>Altitude. Feet.</i>	<i>Shade. Degrees Fahr.</i>	<i>Sun. Degrees Fahr.</i>	<i>Difference. Degrees Fahr.</i>
Whitby.	66	89.6	98.6	9.0
Oatland Park.	151	86.0	106.7	20.7
Pontresina.	5,900	78.8	111.2	33.4
Riffelberg.	8,432	76.1	113.9	37.8
Gornergrat.	10,300	57.6	116.6	59.0

TABLE II. VERTICAL TEMPERATURE GRADIENTS.

<i>Station.</i>	<i>Altitude. Feet.</i>	<i>Mean Temperature. Degrees Fahr.</i>
Geneva.	1,312	70.0
Chamonix.	3,543	64.2
Col du Géant.	11,170	36.5

*Climate.* The climate of a mountain region is very different from that of any lowland country. Most of the peculiarities of a mountain climate are the result of the lower pressure of the atmosphere at high elevations. The pressure is less (or lower) because there are fewer layers of air above a high surface to press upon it or in other words there is less weight of air above it. The effect of this rarified air is very great. The rays of the sun penetrate more easily and reach the surface of the earth through less thickness of atmosphere so that the sunshine is hotter than it is at lower levels. This has a great effect on the growth of plants. It also makes the difference between the temperatures in the sunshine and in the shade very great, and in Switzerland or any mountainous country any one not used to the climate may find the scorch of the sun too strong for safety, and yet on moving into the shade may get too cold very quickly (Table I). So though generally speaking the temperature is lower at higher elevations<sup>1</sup> yet

<sup>1</sup> For every 300 feet elevation the decrease in temperature is 1° F.

the greater strength of the sunshine partly compensates for this, and plants grow very rapidly (Table II).

The difference between the temperatures of day and night are also greater than in lowland countries, for just as the rarified air over mountain regions allows the rays of the sun to penetrate easily to the surface of the earth, so the heat is given off again after sundown more easily and quickly than in regions of denser air. This night cold may be more intense in the valleys among the mountains than on the mountain slopes themselves, for cold air is heavier than warm air, and as the air cools above the hill slopes it sinks to the bottom of the valleys where the coldest air collects. There may often be frost below when there is none above, and some plants will therefore grow better higher up than down in the valley. This may be the case even in the lower hill country of England. On account of these cold nights in mountain valleys the villages of the region are usually placed fairly high up on the slopes above the limit of the fog that often accompanies the cold in the valley bottoms.

*Rainfall.* The rainfall of a mountain region is heavy because the air is constantly rising to cross the ranges, and precipitation is caused through expansion and cooling. As the higher the air rises the greater the cooling, the amount of rainfall increases with altitude up to a certain height, after which it decreases again because in the colder regions at great heights there is less water vapour in the air. The height at which the rainfall ceases to increase is different in different latitudes, and is not very easy to determine. In the mountains of central Europe it happens probably somewhere between 6,000 and 7,000 feet above sea-level. The following figures show increase of precipitation with elevation at two places on the western slopes of Arlberg Pass.

<i>Place.</i>	<i>Elevation in feet.</i>	<i>Annual Rainfall in inches.</i>
Bludenz.	2,000	47
St. Christoph.	5,900	71

The precipitation often takes the form of snow even in the summer months in the higher valleys, and at great altitudes it is always snow that falls, not rain. In winter a very large amount of snow falls at all altitudes and the valleys are snow-bound for many months. The height at which the ground is always covered with snow, where even the summer sun cannot melt it away entirely, differs with the aspect of the slopes. On the sunny southern side in the Alps the 'snow-line' is at about 10,000 feet above sea level, and on the colder northern side it is 1,000 feet lower.

*Vegetation.* As the temperature and rainfall of mountain regions varies at different heights there is a corresponding change in plant life and a series of belts or zones of vegetation result. As long as the rainfall is heavy and the temperature is not too low trees will grow freely, and the lower slopes are covered with forests, except where these have been cut down. In the Alps and Carpathians the lowest belt of woodland is composed of broad-leaved deciduous trees. This belt reaches to an average height of 5,000 feet. Beech is the most characteristic and common tree though there are other species, of which chestnuts on the lower slopes are the most important, especially in the eastern Alps. Next above the beech woods, at colder altitudes, are evergreen coniferous forests chiefly firs but with some pines. This belt reaches to about 6,000 feet. At its upper limit the trees become stunted and various low shrubs appear, the most common being a dwarf rhododendron with a brilliant red-pink flower, called Alpenrose. It forms beautiful patches of colour on the high mountain slopes in July, a vivid contrast to the dark firs of the woodland below. These shrubs mark the transition from forest to grassland which forms the vegetation of the high mountains above 6,000 feet. The alpine pastures are famous for the rich colouring of the flowers that grow on them. There are a great number of deep blue flowers such as the gentian, of a richer blue than any flower that grows in an English meadow. Many of the English flowers grow there also but always the colouring is

much deeper than it is here. Finally at 9,000 and 10,000 feet vegetation ceases and bare rock and snow fields form the summits of the mountains.

Each of these vegetation zones supplies something for the use of man though it is not very easy to utilize them. The deciduous forest zone will produce cereals and hay when the land is cleared, the coniferous forests supply timber both for fuel and building, and the high grassland summer pasture for flocks, but the life of the region has to be organized very carefully in order to make the best possible use of these resources.

*Seasonal Life in the High Alps.* Life is hard in a highland region, as we saw in Scandinavia and in the Balkan peninsula. In the high Alpine region it is hard on account both of the severe climate and of the steepness of the ground that makes movement and agricultural work difficult. During the long winter, while snow covers all the valleys as well as the hill-sides, no outdoor work can be done, so all the work of the year has to be concentrated into a short period. This makes alpine life busy once the snow disappears from the lower slopes, and a careful routine is followed as the season develops. The work is almost entirely pastoral as very little of the land is capable of cultivation. Spring does not begin till the middle or end of April when the snow at last disappears from the valley floor and the lowest slopes. The ground is not clear at 6,000 feet where the high pasture begins till the first week of June and near the upper limit of the pastures there is snow till the end of June. The melting of the great winter accumulation of snow is not the work of the sun alone, the process is much accelerated by the mountain wind known as the Föhn.<sup>1</sup> This is a dry, warm wind blowing down from the mountain tops which has lost its moisture on the other side of the range and is warmed by compression as it descends. The Föhn does more work in melting the snow and drying it up in a day than the sun does in a week, so, though it is very

<sup>1</sup> The Chinook of the Rocky Mountains in Canada is a similar wind

strong and destructive, blowing roofs off houses and breaking down trees and causing fires by its dryness, it is still welcomed by the mountain people as hastening spring and allowing them to get to work much sooner than they would without it. Later in the year it also helps to ripen crops. The vine harvest in some alpine valleys depends upon the Föhn.

For the first week or two after outdoor work becomes possible, the land immediately round the village occupies all the attention of the inhabitants in mending the roads and preparing for the crops, but in the beginning of May the cattle have to be taken away to the meadows on the higher slopes above the village. These meadow-lands must not be confused with the high natural pastures: they occur within the zone of forests, and are cleared spaces in what would otherwise be forest-land. In these clearings, which are often called Mayen or May pastures, there are a certain number of houses built for summer use forming subsidiary summer villages or hamlets. Excellent hay will grow on these meadows and three crops can often be obtained. This hay is very important for winter fodder, so the cattle must not graze the meadows longer than can be helped; hence directly the high pastures are free from snow the cattle and the goats with them are driven away up there, climbing right through the forest belt. In order that the cattle may manage the ascent easily, good paths are always kept up through the woods ascending to the pastures where they stop. One piece of work in spring therefore is to repair and build up these paths afresh after the damage done by the snow.

Cattle, as we have seen, must form the chief wealth of the mountain-dweller, and everything connected with the life of the herds is of great importance. This annual migration to the high pastures is therefore the great event of the village and is made a festival, just as in agricultural countries, such as England, the harvest is specially celebrated. The procession of cattle and goats, a long procession as the animals must walk in single file on the narrow mountain paths, is accompanied

for some way by the whole village playing and singing. Some of the men of each village will go to the high alps with the animals and once there they have to stay, for it is impossible to be coming and going up and down those thousands of feet, so rough wooden huts are built for their shelter. This is a still more temporary settlement than that on the May pasture and is of the simplest kind; it cannot even be described as a hamlet. It is just a huddled collection of one-roomed huts within which are no comforts at all. They provide nothing but shelter, and the utensils required for making the cheese, for this is the occupation of the men and keeps them very busy. The milk cannot be brought down into the valley and it is made into cheese in these huts. As the summer goes on the cattle go higher up the mountains following the retreat of the snow during June, and reach the highest pastures in July where they stay till mid-August.

Meanwhile the portion of the family left in the lower meadows is busy with the hay which keeps them occupied till September. By this time the cattle have been driven down from above by the return of snow on the heights and are ready to graze on the Mayen again. Even here they cannot stay beyond October, and before the end of this month they are back in their stalls in the village and winter sets in again, though sometimes the valley is not entirely snow-bound till early December. Although outdoor work now ceases there is important indoor work to be done. For the children there is schooling, for the whole family including the children have to help the outdoor life in the short summer, and school waits for the arrival of the snow. For the grown-up people the two chief occupations are wood-carving, which is quite a profitable business—the summer tourists buying many of the articles on the spot, others going to the towns—and spinning and weaving, for many of the more remote villages supply their own clothing.

Alpine villages, then, usually have three sets of dwellings at three different altitudes inhabited by the same families at

certain seasons of the year, the settlement becoming simpler, rougher, and less organized at each higher stage. There is the regular village in the lower part of the valley where some part of each family stays all the year with its church and school, if it is large enough, well-built comfortable chalets, and large granaries. Wood is the natural and cheapest building-material in the high alps and in all mountain regions, and the houses are all made of it; but the church will be built of stone. Then there is the summer settlement on the Mayen consisting of dwelling-houses and barns only, but the houses though small and simple are real dwellings and not mere huts. In recent years a hotel has in some cases been added for summer visitors. Lastly at 7,000 feet or so is the collection of rough, one-roomed huts for the herdsmen, dark and comfortless places, often without any windows, the door admitting all the light and air that ever penetrates into them. Since one set of people have three sets of dwellings the region appears to be more densely populated than it really is.

The population of the mountain regions is bound to be a sparse one on the whole. The proportion of uninhabitable land is large, for there is no permanent habitation above 6,000 feet, and even the summer shelters for the herdsmen are not found higher than about 8,000 feet. The wider valleys have a fairly dense population in their lower parts, but on the higher slopes below the uninhabited area there are under thirty persons to the square mile.

*Peoples and States.* The peoples who occupy the mountain area of central Europe are of the round-headed type, known as Alpine, and confined mainly to the highland region, though they have sometimes spread into the lowlands around. They spread, as was shown in the account of eastern Europe, into the open plains of south Russia and added to the mixture of races in that lowland region. In mountain areas where movement is difficult and life not easy to maintain the peoples are often less mixed than in level countries across which it is easy to move and in which it is easy to settle.

But though the inhabitants of the central mountains are largely of one race yet several languages are spoken, the languages of the different nationalities that have conquered parts of the highlands at different times. The chief of these languages are French, German, Italian, Romansch, and Chekh. The highlands are surrounded by rich fertile regions, and to communicate between these its mountains have to be crossed; the highlands lie also in the path of movement from the southern to the northern seas, and hence the nations on either side were anxious to control the passes. Wherever possible, therefore, these nations have taken into their borders the part of the mountains close to them. This has led to the existence of many political divisions. The three natural sub-regions of western, central, and eastern Alps, for instance, are politically separate from each other. The western Alps which divide the Italian plain from the French plain of the Rhone belong on their eastern slopes to Italy and the western to France, but it took centuries of struggle to determine this frontier.

The central Alpine region proved too strong to be absorbed either by Italy or Germany and itself formed an independent power, the Swiss Republic, which spread over the Alpine Foreland and the Jura mountains that border it on the north-west. So the present Switzerland extends beyond the Alps and consists of three natural regions, all elevated but of different character, the central Alps, the Jura mountains, and the plateau lying between them. This last is the most important part of Switzerland economically. The physical features of the Jura and the plateau will be considered a little later (pp. 199-203).

The eastern Alps form another state, that of Austria, a state that for a long period, now ended, extended its rule over all the middle Danube and Carpathian lands (Hungary) to which its Alpine valleys directly lead (see pp. 180 and 204). It also controlled the Bohemian plateau to which it had access on its easiest southern side (see p. 245), but which has now broken away to form part of the Republic of Chekho-Slovakia



(see p. 272). The chief town of Austria, Vienna—of more than Austrian importance (see p. 213)—lies not in one of the Alpine valleys but in the Danube lowland. This was a central position in Austria when it ruled all the Danube lands, with excellent natural lines of communication over all the empire, but Vienna is now on the edge of Austrian dominions.

### SUB-REGIONS OF THE ALPS

The natural sub-regions of the Alps are, as has been shown :

Western Alps—Franco-Italian frontier.

Central Alps—Switzerland.

Eastern Alps—Austria.

*Western Alps.* This section stretches from the Mediterranean seaboard, where the Alps join on to the Apennines, as far as the Great St. Bernard pass. There is one main chain running in a curve from south to north and forming the water-parting, with many branching spurs and sometimes lower parallel ranges. The peaks of this chain which has different names in different parts (Maritime, Cottian, Graian, Mont Blanc ranges) are all fairly high, increasing from about 10,000 feet in the south to 15,000 in Mont Blanc in the north.

From the crest of the chain the rivers run off to east and west. Those on the east are gathered up by the river Po and those on the west by the lower Rhone. Connecting the east and west valleys are the passes which lead from the head of one to the head of the other and form the natural routes over the mountains.

There are many valleys and therefore many ways of crossing the mountains, but they are steep and somewhat toilsome routes, for the passes are 6,000 and 7,000 feet high. The most important of these western passes is the one that lies nearest to the centre of the region. This is the Mont Cenis pass and under this or nearly under it a tunnel has been pierced and a railway laid<sup>1</sup> (see Fig. 45). This railway route forms the

<sup>1</sup> Finished in 1871. It was the first tunnel made through the Alps. The

chief link between Italy and France. Most of the other passes have good carriage roads and a considerable amount of traffic goes over them in summer, but in winter they are closed by snow. The Mont Cenis railway then forms the only means of crossing the western Alps, and the cutting of the tunnel which meant the establishment of a means of land communication all the year round between the countries on either side of the mountains made a great difference to the trade of this part of Europe.<sup>1</sup>

*Towns.* There is no room for large towns in these Alpine valleys, but the existence of the passes at the head of the

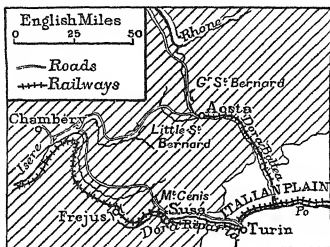


Fig. 45. Some routes of the western Alps.

valleys has helped to determine the position of important towns on the Italian plain (p. 161). At the mouth of each valley as it opens towards the plains, however, there is either a small town or a large village according to the size of the valley and the importance of the route behind it, forming the one link the scattered inhabitants of the valleys have with the outer world. Two examples of the larger of these little towns may be given. On the French side Chambéry stands at the second, that under the St. Gotthard, was begun the next year and finished in 1882. The Mont Cenis took fifteen years to make.

<sup>1</sup> A second tunnel under this section of the Alps is now contemplated, to run under the Mont Blanc range.

mouth of the wide valley that leads down from the Mont Cenis and Little St. Bernard passes; and on the Italian side Aosta is placed where the routes from the Great St. Bernard and the Little St. Bernard meet. These towns both occupy important positions, but the Mont Cenis route being of more than local importance, Chambéry is a much larger centre than Aosta. It has twice as many inhabitants, having 16,000 to the 8,000 of Aosta.

*Central Alps.* These stretch from the St. Bernard pass for about 160 miles in an eastward direction. The mountains of the two parallel ranges of this region are higher than in the western section. Several peaks are almost as high as Mont Blanc and many are over 13,000 feet. The deep trough which separates the ridges is followed in its western half by the river Rhone and the eastern half by the upper Rhine. At the two ends of this trough each of these rivers breaks through the northern ridge at right angles and becomes transverse instead of longitudinal. Both flow into large lakes as they emerge from the mountains, the meeting point of river and lake forming positions at which towns of some importance were sure to grow up. These lakes and the valleys leading up from them make important routes into the mountains and the towns, Geneva and Constance, are large and well known. Routes in other directions also converge on the lakes of Geneva and Constance and add to their importance, as will be seen later (p. 201).

*Passes.* In the centre of the region the two parallel chains draw together somewhat near the sources of the Rhone and Rhine. Here the northern range is cut right through by the river Reuss, flowing north to Lake Lucerne. Opposite this gap the southern ridge is cut by a notch, the St. Gotthard pass, affording a good route over the Alps and forming the chief link between Germany and Italy. This is the only point in the central Alps where one pass leads right over the highland; elsewhere the unbroken parallel ridges make two ascents necessary. Hence the importance of the St. Gotthard pass

and the reason why this route was chosen for the first tunnel under this section of the Alps. More recently the double mountain barrier west of the St. Gotthard has been pierced by two tunnels and a second railway route laid across the central Alps. One tunnel runs nearly under the Simplon pass, the other nearly under the Gemmi pass (see Fig. 46). As in the western Alps, most of the passes, whose height is about the

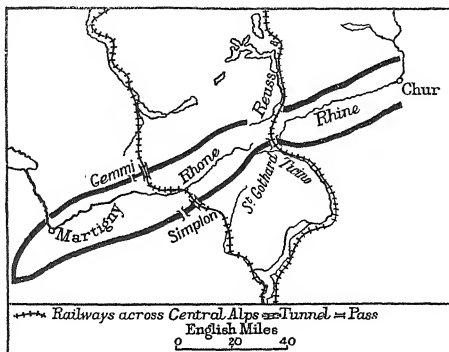


Fig. 46. Railways across the central Alps.

same, have carriage roads over them and a considerable amount of traffic in summer.

*Population and Towns.* The chief centre of population is the Rhine-Rhone valley. It is the largest of the glacial U-shaped valleys of the Alps with a wide, flat floor a mile or so in width, so that there is space for cultivation and for towns to grow up. Pasture is not the only resource of the people of this valley. They are occupied a good deal in agriculture. Maize and other crops are grown on the valley floor and vines on the slopes, especially on the southward facing side.

Wherever side valleys come into the main central valley

villages or towns are placed, just as there are towns or villages where the outer transverse valleys open to the lower land beyond the highlands. Two of the largest towns have grown up at the ends of the trough where the rivers and valleys turn northwards and start on their course out of the mountains. These are Martigny at the Rhone bend and Chur at the Rhine bend. Chur is the largest (15,000 inhabitants) as a greater number of routes leading over from Italy converge there, those over the Splügen, Julier, and Albula passes being the chief. Martigny has only 3,000 inhabitants. There is a line of towns where the southern valleys meet the plain of Italy similar to those at the foot of the western Alps (p. 195) and another at the northern foot where the Alps meet the plateau of the foreland. Some of these towns will be considered when dealing with the Foreland.

*Switzerland.* The central Alps, with the exception of some of the southern slopes, are, as we have already seen, part of Switzerland, and, though now less important than the other parts, it was here that the first independent Swiss communities came into existence. The inhabitants of mountain valleys are obliged to live very much apart from the people in the country around them on account of the difficulty of movement in mountain regions. Hence they become independent in spirit and as a result independent not only in economic matters but also in matters of government and politics. It is easy for them to maintain this political independence because of the character of their country. So we find the inhabitants of the northward sloping valleys in the centre of the central Alps round about the important St. Gotthard pass forming together an independent power. From this strong position commanding the best route over the Alps the Swiss cantons spread their power over the Alpine Foreland as far as and including a good deal of the Jura mountains which bounds it on the north. Each bit of territory acquired was, however, given rights of free self-government, and Switzerland has remained an independent democratic republic.

These other two regions that form part of Switzerland (see Fig. 47 and p. 193) and are thus intimately connected with the central Alps will be considered now before we go on to the eastern Alps.

*The Alpine Foreland*, which forms the middle natural region of Switzerland, though not truly mountainous is very far from being a level country. The rivers which come down with great force from the mountains have cut deep valleys in its surface. The country therefore is a region of hill and valley,

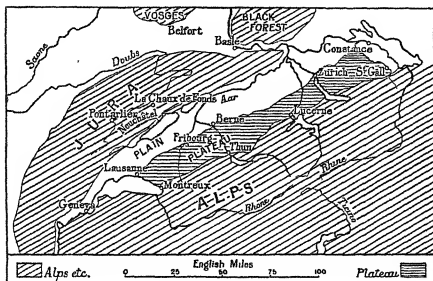


Fig. 47. Natural Regions of Switzerland.

the slopes becoming gentler and the valleys more open as you go northwards, so that the plateau can be divided into two parts, a more hilly region on the south-east, near the Alps, and a lower, more level area, distinguished as the Plain, on the north-west, near the Jura. The rivers all flow down from the Alps and across the plateau directly towards the Jura mountains, but being unable to continue their way across these highlands they are forced to turn and run along the foot as one stream, the river Aare. The river finally makes its way through some lower spurs of the Jura and joins the Rhine during its passage through the belt of limestone heights (see p. 183).

*Occupations.* Though a good deal of the higher slopes of plateau Switzerland, especially in its hilly south-east portion, is only useful for pasture, the valleys and the more level spaces of the northern part can be cultivated and produce a number of crops. On the sheltered slopes, especially in the lee of the Jura and on the northern shore of lake Geneva, vine-growing is important. Tobacco is grown on the plateau close to the Jura where the rainfall is not so heavy, and here some cereals are also cultivated, but they are less important than fruits such as apples, cherries, and plums, which are grown extensively in all the more sheltered valleys. In the hilly pastoral region a great deal of cheese is made, as in the High Alps, and condensed-milk factories have been established, as these two products of a pastoral region are easy to transport. Both form an important part of the export trade of the country. Switzerland, however, is not only a pastoral and agricultural country, for its mountain streams have an immense power in them and electricity is easily and cheaply generated in all parts, as it is in Scandinavia. So though practically no coal is found in the country, yet its industries, run by water-power, are quite important and occupy a large number of people. They are carried on in the lower part of the plateau where communications are easier. The most important manufactures are those of silk, cotton, and machinery, with Zurich as the chief centre. The town is placed at the foot of the lake of the same name in a good position for communication by means of the lower valley of the Aare with Basel, and by the St. Gotthard route, which lies due south of it, with Milan, and so with the countries outside the mountain barrier of Switzerland. Zurich is not only the centre of the industrial area, but itself manufactures both textiles and machinery, and on account of this is the largest town of the republic.

*Population and Towns.* The population of the plateau is naturally densest in this northern industrial portion. The population in fact increases northwards and westwards away from the Alps and towards the manufacturing area. In this

area there are over 400 persons to the square mile. The towns have grown up in the valleys on the banks of the rivers at three different points in each valley. One is where the valley emerges from the high Alps on to the hilly section of the plateau, another where the hilly region merges into the plain, and a third at the foot of the Jura mountains. Thus there are three lines of towns running in a north-west to south-east direction along the plateau parallel with the mountains. The towns along the central line are naturally much the largest. Zurich (pop. 223,000) is one of these. Others are Berne (110,000) in the centre of the line, the capital of the country, Lausanne (pop. 78,000) on the north of lake Geneva, and Geneva (pop. 123,000) at its southern end, a position that has control of the passage cut by the Rhone through the Jura giving access to the Mediterranean and to various parts of France. Lucerne (pop. 46,000—much increased by visitors) may be mentioned as an example of the towns along the line where the plateau meets the Alps, and Neuchâtel (pop. 22,000) as the most important at the foot of the Jura—important because it lies in the centre of the line and has behind it a good natural route across the Jura (see p. 203).

*Railways.* The only region in Switzerland in which railways are at all easy is that of the so-called plain, and two lines run along it connecting the two chief series of towns; that is to say, one line along the foot of the Jura, another close to the hilly region. These parallel lines are connected with each other at certain points, linking together the most important towns of each series, for example Berne and Neuchâtel, on both of which routes from the mountains behind converge.

*Jura.* The third natural region of Switzerland, the Jura mountains, is markedly different from the other two. It is formed entirely of limestone (see p. 183) which was crumpled up into many folds at the same time that the Alps were upraised. The region consists therefore of several parallel ridges, 3,000–4,000 feet high, separated by narrow valleys a thousand feet deep and very steep. The slopes are all covered with pine



forests right to the summit, except where bare, perpendicular rock appears, as is the case on some of the peaks, for the ridges do not rise above tree-level. The region, then, is one that is very difficult to move about in and is sparsely peopled.

*Occupations.* The most important natural resource is timber, for the slopes are often too steep to be used for pasture. Where the gradient will allow it the forests have been cleared for pasture lands, and in these clearings the villages are placed. The chief occupations, then, are lumbering and pastoral, the keeping of cows and goats. Every village has its saw-mill, while the cows are tended with great care as they are specially important in this land of somewhat scanty pasture. The cow-bells of the Jura are the most melodious in Europe and a source of much pride to their owners. A cracked bell is never allowed to remain on the neck of a cow, and the sound of the bells as the animals are taken home through the village at night or taken out to pasture in the morning is a specially charming one in the Jura region.

The rather meagre natural resources of the region are increased in the larger valleys by the development of a clock-making industry. This is suitable to the region, because the finished products are small and easily transported, an important consideration in such an inaccessible country.

*Towns.* The population, which is as sparse as in the Alpine region, is of course confined to the valleys, but is not as a rule found along the valley bottoms. This is because the lower parts of the valleys are so narrow, deep, and steep, often mere limestone gorges; but higher up, perhaps 200 or 300 feet above the streams, the slope usually becomes gentler, forming a relatively level terrace, and along this terrace the villages are placed and the roads made. The houses are built in a line along the road, for the land on either side of the road is far from level, and the slope is steep enough to make it difficult and inconvenient to spread the village up and down it. The cleared land is valuable, too, and not to be used unnecessarily for buildings, so the villages and most of the little towns as

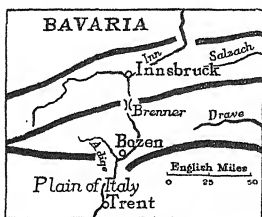
well are long-shaped settlements. Many valleys are too steep and narrow for any habitation except an occasional solitary house. A good deal of the population is scattered like this and not gathered in villages at all.

The towns are all small. The largest are those where clock-making is carried on, and the most important of these is Chaux-de-Fond, the centre of the industry, which is quite large for a mountain town, though its population does not reach 40,000. Next to the clock-making towns in size come those that are situated in the cross valleys that form routes over the Jura highland, but these are much smaller. It is the town just outside the mountain region at the point where the route enters or leaves the highland that grows large as a route-centre. Such are Pontarlier on the west and Neuchâtel on the east of the Jura.

It has been pointed out that this region of steep parallel ridges is not easy to cross. The rivers mostly flow in the longitudinal valleys between the ranges for long distances and break through by gaps which are not opposite each other, and consequently very circuitous routes have to be taken from gap to gap. At two points in the Jura, however, transverse valleys have been formed draining right across the region, and these have made the most important route-ways and have had railways built along them. They are both near the centre of the region. One opens on to the lake of Neuchâtel, whence the importance of the town of Neuchâtel (pop. 21,000); the other opens to the lake of Geneva at Lausanne. On the French side both these routes converge on Pontarlier (pop. 8,000) which is therefore an important railway junction, though as it lies in a rather unproductive limestone region it is not a very large town. The Jura is crossed by two other railways farther north, but both these have to take rather circuitous ways to find gaps, and sometimes tunnel under ranges in order to straighten the route a little.

*Eastern Alps.* The eastern Alps are much less high than the rest of the Alpine region and have a more complicated

topography. The great furrow of the central Alps followed by the upper Rhone and Rhine is continued after a break by the valleys of the upper Inn, Salzach, and Emms, and finally emerges into the plain of Vienna. To the south of this great furrow the eastern Alps break into several parallel ranges (see p. 180) and between them the three longitudinal valleys of the Mur, Drave, and Save drain to the middle Danube plain. It is easy, then, to move east and west in this region, but the succession of parallel ridges makes it very difficult to go from north to south across the Alps, except at one point. Here



THE BRENNER PASS

Fig. 48.

the long transverse valley of the Adige cuts right across the southern range, leading to an easy pass over the central mountains, whence the Inn valley can be followed to the Bavarian plateau. The summit of the pass, the Brenner, is only 4,500 feet high, and it is much the easiest route in the whole Alpine region (see Fig. 48). It is low enough

to be passable even in winter, and the railway has not had to tunnel but could be taken over the summit. The historical importance of the Brenner is great, as it formed the easiest line of route between Germany and Italy, and in early days these two countries had a close political connexion. The Brenner route leads down to the plain of Italy close to Venice (see p. 165), the port of the east, and hence the pass was of economic as well as political importance. There are many other passes, over the different ridges of this region, but they are not important and few have roads over them. Quite recently, that is during the period 1901-7, in spite of all the difficulties, a railway has been made

connecting the country north of the Alps with Trieste on the Adriatic coast. This line starts from Salzburg, follows up the Salzach valley, and then burrows under the successive ridges in its path southwards and has three long tunnels. In contrast to this, railways have been made easily up each of the longitudinal valleys from the eastern plain, and that along the middle valley of the river Drave connects with the line over the Brenner.

*Occupations and Towns.* The slopes of the eastern Alps are more generally covered with forests than the rest of the Alpine country. Great woods of chestnuts clothe the lower slopes, giving the region softer outlines and a gentler aspect than is seen farther west, while snow slopes and glaciers are absent over the greater part. As a result there is less uninhabitable land, and in the wide U-shaped valleys there is more land capable of cultivation, and the density of population is greater. Each of the four long valleys<sup>1</sup> has its line of little towns, so there are quite a number of centres of population. Two of the largest are those at either end of the Brenner pass, Innsbruck and Trent.

To the usual pastoral and rather restricted agricultural occupations of the Alps there is added in this region the working of several minerals, for the eastern mountains have important deposits of iron and less important ones of lignite, lead, zinc, and mercury. Industries connected with these minerals have increased the size of the towns at the mouths of the valleys where they open to the Hungarian plain. Thus Graz, at the end of the Mur valley, instead of being a small agricultural and market town like many others similarly situated, is a manufacturing centre of 152,000 inhabitants chiefly engaged in iron-works. Most of the smaller towns in the lower part of these eastern valleys also manufacture iron in some form or other and hence are larger than the other inter-Alpine centres.<sup>2</sup>

<sup>1</sup> These are (i) Inn-Salzach-Emms, (ii) Mur, (iii) Drave, and (iv) Save valleys.

<sup>2</sup> i. e. Klagenfurt in Drave valley, 27,000, and Laibach in Save Valley, 43,000 inhabitants.

## SUB-REGIONS OF THE CARPATHIAN LANDS

The natural sub-regions of the Carpathians (see p. 180, and Fig. 41) are:

Northern Carpathians—Slovakia,

Central Carpathians—Slovakia,

Southern Carpathians—Transylvania,

and with these must be taken the lowland which they encircle, the Middle Danube Plain, though it forms another and different natural region.

*The Northern Carpathian* region consists of a series of short curved ridges lying one behind another and separated by valleys considerably wider than those of the Alps. Many small lakes and tarns occupy hollows in the higher parts. From north to south the mountains cover a region nearly as wide as that of the eastern Alps, but it is much shorter from east to west. The ranges are lower, being only on an average from 5,000 to 7,000 feet high. The chief range is that of the High Tatra with peaks rising to 8,000 and 9,000 feet.

It is not difficult to move between the ranges, and the direction of the drainage helps to minimize the difficulty of crossing the region from north to south. The river Vag (Waag, see Figs. 41 and 49) should be noticed particularly. Its wide valley forms an easy route across the whole width of the mountains except for one ridge in the north, and this is cut by the Jablunka pass, just under 2,000 feet in height. By this natural route a railway has been taken connecting the plain of the Danube with the plain of the upper Oder. At the eastern end of the region a similar though smaller valley (Hernad) leads down to the Hungarian plain from a pass over the northern range, and has given opportunity for another railway linking Germany and Hungary.

*Occupations and Towns.* The Carpathians are well wooded with beeches, oaks, and conifers, the coniferous forests extending nearly to the summits, as the mountains do not reach much above the tree-line. As might be expected, the popula-

tion is denser than even in the eastern part of the Alpine region. The wide valleys leave plenty of room for habitation and allow of a fair amount of agriculture, barley being the chief cereal crop, and thus along the main valleys there are a number of small towns. The southern part of the region is rich in mineral wealth, especially iron, silver, lead, and copper, and though the supplies are not fully exploited at present mining has considerably increased the size of many of the towns at the mouths of the valleys. Kassa (Kaschau, pop. 44,000) in the Hernad valley is the most important of them. It is not only an iron centre, but a centre of trade and traffic between Hungary and Galicia that now goes by railway across the mountains. Owing to its position on such a good natural route the town has developed many small industries, some of which are connected with the products of the forests, such as saw-milling and paper-making. Selmecz (Schemnitz, pop. 16,000), in a small valley in the south-west, is a more purely mining-centre where gold, silver, iron, and copper are all mined. Selmecz was famous for its minerals in the twelfth century.

On the slopes of the southern hills, which have a rich volcanic soil, the vine flourishes well and causes wine-making to be important in the towns in the plain near at hand, especially in Tokay (pop. 5,000).

*Central Carpathians.* Little need be said about this region. The mountains narrow down to a single range of no great elevation or steepness and cut by many transverse rivers with easy passes between. This range is merely a link between the regions of the northern and southern Carpathians, but is important historically because it allowed of easy passage from the steppes of Russia and west Asia to the steppes of Hungary. The best crossing-place is near the centre, where the Vereczke pass, only 2,700 feet high, is situated. It was by this route that the Hungarians or Magyars first crossed from the eastern plains to the country of the Danube and hence it is known as the Hungarian Gate. It now has a railway over it, as have

several other of the passes of this region, some of which are below 2,000 feet (see Fig. 49).

*Peoples and States.* The section of the Alpine race which inhabits the northern and central Carpathians are Slavs and belong to the branch of the Slav peoples known as Slovaks, nearly akin to the Chekhs of the Bohemian Plateau and of the Moravian valleys. These various regions, which were for centuries under Austrian rule, are now combined as the independent republic of Chekho-Slovakia (see p. 272).

*The Southern Carpathians.* This region, known as Transylvania, consists of a high, rugged plateau about 1,500 feet high surrounded by great mountain ranges (see Fig. 41). Access to it, however, is not so difficult as might be expected at first sight, for the rivers all rise in the mountains of the eastern edge and flow right across the plateau, cutting deep valleys through the highland and emerging on to the middle Danube plain on the west and the lower Danube plain on the south. Good natural routes to the outside world are thus provided which are generally followed by railways, and the important towns have grown up in connexion with these routes. The mountains on the south, known as the Transylvanian Alps, are the highest and steepest with the wildest scenery.<sup>1</sup> They drop very steeply to the lower Danube plain; the rivers have cut only narrow gorges through them, and this is the most difficult side of Transylvania. The chief river, the Aluta, cuts its way through right in the centre of the mountains and through its gorge one railway is taken. A second follows a pass considerably to the east (see Fig. 49), and two of the most important towns of the region guard these two routes, Nagy-Szeben<sup>2</sup> (Hermanstad, pop. 33,000) and Brassov (Kronstadt, pop. 41,000) (see p. 209). A good deal of the country is forest-covered.

*Occupations and Towns.* The surface of the plateau is much broken, cut up by fertile valleys and basins among the hills. In these valleys and basins the towns, which are all

<sup>1</sup> The peaks in this district are often over 8,000 feet.

<sup>2</sup> Also called Sibiu.

agricultural centres, have grown up. They are none of them large towns; even those on the best routes, with the exception of the capital, Kolozsvár, have under 50,000 inhabitants. The country is about equally divided between pastoral and agricultural conditions. The pasture not only supports many cattle but the horses of the region are famous and are exported in great numbers. The climate is warm enough to make maize the chief crop. Fruits are important also, and as usual in these regions the vine flourishes. The forests afford occupation also to a large number of people, and the exports of the country are chiefly the product of pasture and woodland, being dairy produce, raw timber, and wooden articles.

While the plateau is very sparsely inhabited the valleys have a fairly dense population. These valleys are often narrow and cut down some way below the surface of the plateau, so that the villages to fit themselves to the ground are long and straggling, spread along the stream. Where the basins occur towns have grown up. The largest of these is Kolozsvár<sup>1</sup> (Klausenberg, pop. 60,000), the capital of the country and the centre of a fertile agricultural region having many flour-mills. Nagy-Szeben and Brassov are route-centres (see p. 208) as well as agricultural market towns, and being near the mountains have important timber industries.

*Peoples.* The inhabitants of Transylvania are not all of the same race but the greater mass of the people are Rumanians or Vlachs (Wallachs), and for this reason the country has been transferred from the kingdom of Hungary to that of Rumania. The Magyars of the plain of Hungary entered the country in fairly large numbers during the eleventh century, conquered, settled, and kept control over much of the land, while a third and quite foreign element was introduced in the twelfth century when the Hungarian conquerors brought in a set of Saxon colonists from the lower Rhine country. Though these three races have lived side by side for centuries they have never mixed to any extent and the settlements are usually

<sup>1</sup> Also called Cluj.



either definitely Vlach, Magyar, or Saxon in character, or each race may have its own quarter in the same town. The villages are often double settlements. One part will be Saxon with houses built of stone and arranged with order, but the Vlach dwellings at the other end of the village are made of mud and timber and huddled together without any arrangement. Sometimes a gipsy encampment will add a third part to the settlement, giving it an odd appearance, for their huts are sunk half underground, only the upper half and the roofs appearing above the surface.

Many of the villages of Transylvania are very inaccessible and far from any railway; hence old customs linger on and national costumes are still worn.

#### MIDDLE DANUBE PLAIN

The plain of the middle Danube, the formation of which, as already explained, is the work of rivers, is a land of many waters. These waters are all collected finally by the Danube and carried out in the south-east corner through a narrow passage between the Transylvanian mountains and the Balkans to the Black Sea. The Danube itself as it flows south across the plain receives all the western rivers from the Alps, while its chief tributary, the Tisza, flowing parallel to it about fifty miles away, collects the eastern rivers from the Carpathian country. These two rivers do not join until shortly before the Danube leaves the plain.

The central part of the plain is low and marshy, the damper belts near the rivers alternating with sandy strips. This region being almost level, varying from 250 to 500 feet in height and receiving its waters from high mountains, is very liable to flood, and in order to protect the country from devastation many canals and embankments have been made. The Danube drains nearly the whole length of the mountains of central Europe; hence the volume of water in the lower river is enormous. The Alpine tributaries are swiftly-flowing rivers that increase rapidly in volume when the snows of the Alps begin to melt in spring, and are a special danger to the

plain. West of the main stream of the Danube the land is not so low and level. It is varied by hills and low mountains and has not the monotonous appearance of the country to the east of the river.

The whole plain is divided by hills into three very unequal regions. The largest contains the greater part of the lowland, but in the north-west a line of heights running crossways between the Alps and Carpathians cuts off a much smaller region known as the upper Hungarian plain. The passage cut by the Danube through this mountain barrier is a very important gateway and is marked by the fortress town of Buda placed on the slopes above the river. The upper Hungarian plain is also closed in to the north-west by a second line of hills joining Alps and Carpathians, beyond which is a yet smaller region, the basin of Vienna. The passage of the Danube through the second line of heights is guarded by the town of Bratislava (Pressburg).

*Occupations.* These three lowland basins are all fertile agricultural regions. Originally the plain with its wide grasslands, known as Puszta, was used as pasture, as was the similar steppe land of south Russia, and was famous for cattle and horses, its people leading the usual wandering pastoral life (see pp. 21 and 22). Now that draining and river regulation have been undertaken the land is famous for wheat instead, and the general aspect of the plain—the Alföld—is much changed. Its rich alluvial soil is capable of producing a great deal, but the smallness of the rainfall (from 20 to 24 inches) prevents there being as much cultivation as the soil would allow, so some of the plain is still in the natural pastoral state. The climate of the plain, owing to its being so entirely cut off from oceanic influences, is extreme, and the mountain rim also prevents much rainfall. Drought is apt to occur in the summer, and winds blowing unchecked over the great open spaces, as in Russia, cause terrific dust-storms and generally makes the climate rather unpleasant. Irrigation to compensate for the slight rainfall is not easy in many parts as the rivers get very low

in the summer. Maize is the cereal crop next in importance to wheat on the heavier clay lands. In the more sandy districts orchards flourish, while vines are grown to a great extent on the hills of the north and north-west.<sup>1</sup> The export trade therefore is chiefly in wheat and flour, cattle, and wine.

*Populations and Towns.* The general conditions being so similar over the whole plain the density of population is much the same for the whole region, and works out at about 177 people to the square mile. This population is not scattered rather evenly over the country as in most agricultural regions, but is gathered together in very large villages placed at considerable distances from each other. This unusual distribution of the population is due to the need of defence in past times. The plain lies open to attack from the mountain regions all round it and the people gathered together in large numbers for safety. Isolated farm-houses or small villages would be absolutely unsafe, and as a result there are large agricultural centres of as many as 30,000 inhabitants that are mere villages in character with no town organization or town buildings. This is a state of affairs peculiar to Hungary. Such settlements stretch for long distances on the plain, and the impression is given that all the villages from the whole countryside have been lifted bodily and put down side by side. Even Debreczin, one of the chief agricultural centres of the northern part of the plain, has this village character and has no paved streets. Only the large cities on the main stream of the Danube have any modern development.

The towns on the whole avoid the rivers, as do the roads and railways, but at the few crossing-places important centres have grown up, the chief of which are Budapest (pop. 978,000) and Bratislava (pop. 93,000) on the Danube, Szeged (Szegedin, pop. 125,000) on the Tisza. Away from the rivers there are three lines along which the larger settlements are found. One follows the higher sandy strip of country between the marshes of the Danube and Tisza, along which are Szabadka (Maria-

<sup>1</sup> See p. 207.

Theresiopol, pop. 95,000), and Czegled (pop. 79,000). Another is near the highland edge of Transylvania where the rivers emerge from the mountains, and here are Debreczin (pop. 108,000), Nagy-Varad (Grosswardein, pop. 64,000), Temesvar (pop. 73,000), and Arad (pop. 63,000). The third line is on the opposite edge of the plain near the foot of the Alps, the largest of its towns being Zagrab (Agram, pop. 79,000). These are all still agricultural centres, for though coal exists in large quantities in the surrounding mountains there has not yet been any important development of the industry in the towns of the plain.

*Of the towns at the crossing-places of the rivers, Budapest, the double settlement on both banks of the Danube where it emerges on to the lower Hungarian plain, is far the largest. It is the great route-centre of the plain, the point on which all roads must converge to pass through the mountain barrier behind it and has nearly a million inhabitants. The hills come down to one bank of the river only, and Buda, built on this bank and climbing up the slope, is very different in appearance from Pest on the opposite side, lying on a quite flat plain. Like other capital cities Budapest has gathered a variety of industries round it, but flour-milling is one of the most important, marking it as still essentially the centre of a fertile grain-growing region,*

One other Danubian town must be considered especially and that is the Austrian town of Vienna, in the centre of the smallest of the three lowland basins. This town occupies such an important position that it is of European importance (see p. 194). The little basin of Vienna is surrounded by a number of different natural regions—the eastern Alps, the Alpine Foreland, the plateau of Bohemia, the northern Carpathians, and the Hungarian plain—and the routes from all of these meet at Vienna. The three most important of these routes are: (1) across the plain from the Balkan peninsula whence come the great natural routes from Constantinople and Salonica (see pp. 77 and 78), (2) along the upper Danube from

the Rhine valley and central and western Europe, and (3) along the lower broken country between the Carpathians and the plateau of Bohemia from the gap known as the Moravian Gate, leading both from the plains of eastern Europe and, by the valley of the Oder from the Baltic. The size of Vienna (nearly two million inhabitants) and its importance in European history is explained by the meeting of all these great natural trunk routes.

*Communications.* In spite of its level character the great plain is not specially good for transport. In the soft soil roads are hard to make. As on the steppes of Russia there is no road-metal at hand, and except just round the chief towns the so-called roads are mere worn tracks, very dusty in dry weather and deep in mud in wet weather. Railroads, like settlements, have had to avoid the marshy country near the rivers. They do not follow the lines of the streams but have been built from those points in the mountain rim where entrance to the plain is easiest to the Budapest gap (see Fig. 49). The Danube is now a great line of river traffic, though its value as a route is decreased by the fact that it flows into an inland sea and that its lower course is frozen in winter. In old days navigation was often interfered with by floods and was practically broken at the gorge through the Balkans, the Iron Gates. The Iron Gates were made navigable only in 1878—a work that helped very much in the development of Hungarian trade.

*Peoples.* The people of the plain are chiefly Magyars, a horse-riding, pastoral race who came from the steppes of Asia by way of the Russian steppe and crossed over the easy passes of the central Carpathians into the lowland of Hungary in the ninth century and settled there (see p. 207). A certain number of Slovaks and other Slav peoples from the mountains around have also penetrated into the plain, and members of the tall, fair, long-headed northern peoples either from Austria or from Germany, but these are a small minority of the inhabitants.

The fact that the great level plain is easily overrun by an attacking force has had an enormous effect on the destiny of Hungary and the adjoining lands. The two most important results were, firstly the influx of the Magyar people from the steppes of central Asia just mentioned, and secondly the later coming of the other horse-riding nomads, the Turks, from

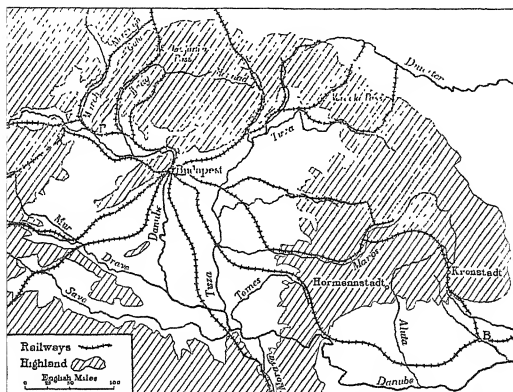


Fig. 49. Map of the chief routes of the Carpathians and Danube regions showing the convergence of railways on (i) Budapest and (ii) Vienna.

south-west Asia in the fifteenth century. The Magyars settled down in the plain; the Turks only overran the region for a time. They conquered the plain as far as the mountain barrier at Budapest; but Austria in the eastern Alpine region was able to defend herself against the invaders. She not only stopped their advance but gradually drove them back again across the plain which she then took for herself, and Hungary no longer formed an independent kingdom. Thus was formed

the great Austro-Hungarian empire, which lasted for five centuries till broken up during the European war of the twentieth century. Then a frontier line was drawn *across* the Danubian plain and the southern portion given to Yugo-Slavia.

## VII

### CENTRAL EUROPE NORTH OF THE MOUNTAIN BELT

GERMANY, BOHEMIA (PART OF CZECHOSLOVAKIA), DENMARK-HOLLAND, BELGIUM, EASTERN BORDER OF FRANCE (LORRAINE AND ALSACE)

*General Character.* The mountains of central Europe, the Alps and Carpathians, are not bounded on the north by a low plain as they are in the south and east. First of all, as has been shown, comes the mountain foreland (p. 182), and beyond this stretches a wide region of very varied relief but nearly all of considerable altitude. It consists of blocks of plateau country cut up by deep valleys and crossed in parts by more definite lines or belts of mountains. It is a very old region geologically, formed of many different rocks, upraised and folded in primary times and much worn down since. The ridges caused by the original folding no longer stand out; the greatest heights are now formed of the areas of harder rock, left when the softer material was eroded away.<sup>1</sup> Many cracks in the surface and the subsidence of some portions have further altered the character of the region, with the result that, as in all geologically old regions, the topography is rather complicated and difficult to grasp. Certain features, however, that will be pointed out later stand out and help to make clear the general plan.

The valleys in this region are fertile and sheltered and have warm climates, but the higher portions are bleak and unproductive and frequently covered with forests. Some of the

<sup>1</sup> The structural history of this region is treated in greater detail in Chapter VIII in connexion with that of the western lowland.

rocks belong to the Carboniferous period and contain coal-measures, and many other minerals are found in the old rocks, so that the resources of the region are considerable and varied.

North of this highland area comes a wide region of very level plain stretching all along the shores of the Baltic and North Seas. It is often spoken of as the North German lowland, for the greater part of it is included in Germany. The plain is covered with recent material brought by the melting waters of the glaciers of the Ice Age and is a monotonous region of marsh and sand very unproductive and difficult to cultivate. It adjoins the Russian lowland without any break except that afforded by the marshes, so that an almost unbroken plain extends from east to west throughout central Europe, forming a line of relatively easy communication; and all the trunk railways connecting west and east run along this great lowland.

Thus in central Europe north of the mountain belt we find two large and strongly contrasted regions, an elevated south and a low-lying north. Each of these when looked at in detail has several natural sub-regions, the southern highland area owing to its varied land-form having more of these subdivisions (see Fig. 50). But in spite of the contrast the two regions of north and south are intimately connected. The rivers of the south, with the exception of the Danube, all find their way to the sea across the northern plain, and the ports of this region are the outlets for the whole of central Europe. That is to say, the ports of the plain have the whole of the interior as far south as the mountain belt as their hinterland.

*Climate.* There is a considerable variety of climate in central Europe. The southern part is not high enough to have a true mountain climate, but the temperature and rainfall are much modified by altitude. The south, though farther from the sea than the north, has a heavier rainfall on account of its height, and both in north and south the west has more than the east, for the chief rain-bearing winds come from the North Sea. The annual fall in the lowland region varies from



28 inches in the west to 16 inches in the east, while in the higher south it varies from 80 inches in the highest parts of the Vosges and Black Forest to 30 inches in the lower uplands and in the east. Proximity to the sea and elevation have also their effect upon temperature. The western part of the plain has a fairly equable climate which gets steadily more extreme towards the east. The difference between

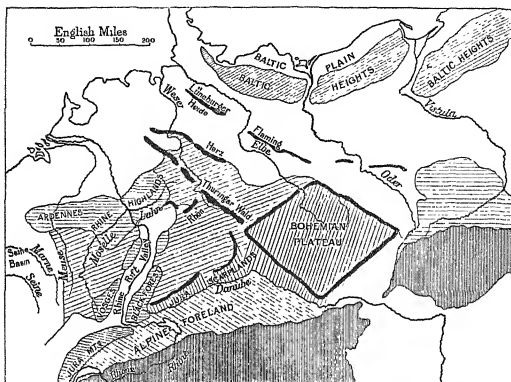


Fig. 50. Natural Regions and subregions of Central Europe. Lowland areas are left white, high areas have a cross ruling, and marked ridges are shown by thick black lines.

summer and winter temperatures is about  $30^{\circ}$  F. west of the Elbe (ranging from about  $34^{\circ}$  in January or February to  $64^{\circ}$  in July) and  $36^{\circ}$  F. east of the Oder (ranging from  $29^{\circ}$  in January to  $65^{\circ}$  in July). The south owing to its greater elevation has a greater range, increasing from  $36^{\circ}$  F. in the west in the Neckar region to about  $40^{\circ}$  F. in the east in the Bohemian plateau. As a result both the rivers and harbours of the west are more useful than those of the east. In the

eastern half of the region east of the Jutland peninsula the rivers are useless for navigation on account of ice for three or four months in the year. Spring is longer coming in the east, and this shortens the growing period for plants and hence affects the question of the crops that can be cultivated.

## TEMPERATURE (Degrees Fahr.)

Place.	Elevation (feet).	Winter.			Spring.		
		D.	J.	F.	M.	A.	M.
Hamburg	64	33.2	33.1	34.1	38.4	45.2	52.1
Hanover	202	34.5	34.2	35.8	39.6	46.5	53.7
Berlin	136	32.8	32.8	33.6	39.0	47.1	54.7
Posen	268	30.2	29.3	30.4	35.4	45.1	53.1
Stuttgart	881	32.4	32.5	36.3	42.1	49.1	55.8
Brunn	692	29.7	28.6	30.9	38.4	49.4	56.2

Place.	Elevation (feet).	Summer.			Autumn.			Range.
		J.	J.	A.	S.	O.	N.	
Hamburg	64	59.8	63.4	62.4	56.6	47.7	39.2	30.3
Hanover	202	61.3	65.4	63.5	57.5	48.5	40.4	31.2
Berlin	136	62.9	66.7	64.9	58.7	48.9	39.9	33.9
Posen	268	62.5	66.0	63.7	57.2	46.8	37.9	37.7
Stuttgart	881	63.3	66.9	65.5	59.0	48.2	40.5	34.4
Brunn	692	63.9	68.4	66.0	58.6	48.7	38.0	39.8

## RAINFALL (Inches).

Place.	Winter.			Spring.			Summer.			Autumn.			Annual.
	D.	J.	F.	M.	A.	M.	J.	J.	A.	S.	O.	N.	
Hamburg	2.4	1.9	1.7	2.0	1.7	2.2	3.1	3.4	3.0	2.6	2.5	2.3	28.8
Beilin	1.9	1.5	1.5	1.8	1.4	1.7	2.5	2.7	2.2	1.7	2.0	1.8	22.7

*Vegetation.* The rainfall is everywhere sufficient for tree growth, and practically the whole region except the marshes has been covered with forests and a great deal of it is still uncleared. The character of the woods changes from south to north. In the south on the lower lands are deciduous woodlands interspersed with coniferous woods on the poorer soils, while in the north they are chiefly coniferous, Scots fir being a common tree. The beech, however, which is a hardy tree that can thrive in a rather dry region on account of its long roots, can grow all over the region and is found on the shores of the Baltic in places where the soil is not too heavy. The

higher parts of the south also have coniferous woods composed chiefly of pines as on the slopes of the Vosges and Black Forest.

The different climates and soils allow a great variety of crops to be grown, ranging from the vines and maize of the warm valleys of the south to the rye and potatoes of the poorer colder north with its long winters.

*Occupations.* Though this variety of crops can be grown in the region it is far from being entirely agricultural. The presence of important coal-fields in various parts has provided opportunity for many industries. It follows that the conditions of human life are more varied than those of the countries already studied; there are fewer geographical limits to the activity of man. The climate is less severe than that of the Russian plain and the Scandinavian peninsula, the surface of the land is less difficult than that of the latter, and the region does not suffer from the combined heat and drought of the Mediterranean lands which puts a check on so many activities. The really mountainous areas of central Europe are few, the absolutely unproductive areas are small, and other minerals as well as coal are plentiful. Hence a large proportion of the population is occupied in manufacturing industry and the people are accustomed to town and factory life, to long hours of continuous work indoors, to less space and to greater competition in life. In order to succeed in such a life more training is required. This has led to greater attention being paid in these countries to education in schools and colleges, and the standard of such teaching and learning is higher than in more purely agricultural regions.

#### THE SOUTHERN HIGHLAND REGION OF CENTRAL EUROPE

*Divisions.* The south has been spoken of as a highland region, but it contains one good-sized plain that breaks the continuity of its plateau character and forms a particularly well-defined sub-region. This is the plain of the middle Rhine, a plain 12 miles wide and 200 miles long. It is not an ordinary river

valley cut out by the action of water and widened by weathering but has been formed by the subsidence of the surface between two great parallel cracks or faults. 'Valleys formed in this way are called 'rift' valleys, and the only other one of importance in Europe is that of central Scotland, the wide lowland let down between the Highlands and the southern uplands. The Rhine enters the rift after cutting through the Jura limestone region (see p. 183), the point where the river passes from one region to the other being marked by the town of Basel (see p. 229).

The rift is bounded on both sides by similar mountain masses left standing steeply up when the plain subsided, and their steep slopes are great obstacles to movement in and out of the valley. The largest of these mountain regions are the Vosges on the west and the Black Forest on the east. These both slope more gently away from the rift to a rugged upland or plateau country covered with forests and cut by the deep valleys of important Rhine tributaries. The upland west of the Vosges, drained by the Meuse and Moselle, is bounded on its other edge by the basin of the Seine (not part of central Europe); and the eastern upland, drained by the Main and Neckar, ends against the steep escarpment of the northern Jura limestone heights that cut it off from the Alpine foreland (see p. 183). The division between the Jura region and the foreland is marked by the upper Danube, which flows along the edge of the two and outlines the foreland. Beyond the Danube on the north-east of the foreland lies the well-marked Bohemian region, a rectangular plateau surrounded by mountain ranges. To the north of the Rhine rift rises another rectangular plateau formed of old hard rock that weathers very slowly, and through which the Rhine has cut with difficulty a narrow passage, a deep gorge forming a complete contrast to the wide valley above. To the north of this highland stretches the great plain. The rest of the region to the east of the Rhine highlands and north of Bohemia consists of lower more broken uplands that fade away gradually into the

plain. They are similar in structure to the uplands east of the Rhine rift, but are distinguished by the fact that they drain away from the Rhine to the other rivers of the plain, the Elbe and Weser.

There are, then, ten different sub-regions to be distinguished (see Fig. 50), some of which are very similar, while others show greater differences. They are the Alpine foreland, the Jura tableland, the Rhine rift, its two mountain edges, the western and the eastern uplands, the highlands of the lower Rhine, the northern uplands and the Bohemian plateau. Some of these regions are linked together by the Rhine which gives them a common central line of communication, others drain in different directions and have their outlook towards different seas and ports. All, however, except the western and eastern edges form part of Germany as is shown in the following table.

<i>Sub-region.</i>	<i>State.</i>
Alpine foreland.	Germany.
Jura tableland.	
Main Neckar uplands.	
Northern uplands.	
Black Forest.	
Vosges.	France.
Rhine rift.	Germany and France.
Meuse-Moselle uplands.	Germany and France.
Lower Rhine highlands.	Germany, France, and Belgium.
Bohemian plateau.	Bohemia, part of Chekho-Slovakia.

*The Alpine Foreland: Bavaria.* Once the broken foothills of the Alpine edge are passed the foreland is a region of small relief with a gentle northward slope. The rivers flowing rapidly down from the Alps have cut deep and fairly wide valleys in the plateau surface, with a border of marsh along the bed of the stream. The northern and southern parts of the plateau differ in character and productiveness. In the

south the surface is covered with coarse glacial gravel from the Alps into which the water sinks quickly, leaving a dry and infertile country that is of little use for cultivation and is covered with rather poor woods. This country extends as far north as Munich and slightly beyond. In the northern half of the foreland the soil is much better, the Tertiary rocks underlying the glacial deposits often coming to the surface. This is a well-watered and productive country. On the borderland between the two regions where the gravels thin out and the water that flowed underground comes to the surface bogs are formed. This belt, formerly useless and a hindrance to movement, is now being reclaimed and utilized.

*Occupations.* The occupations, therefore, are pastoral in the south and agricultural in the north. Barley is the chief crop and gives rise to an important brewing industry which has its chief centre in Munich. There is no coal so that industries are not largely developed, but the Alpine streams have a good deal of power, and in the larger centres industries utilizing the water-power have grown up recently.

*Towns.* In such a country many large towns would not develop, and it is on the whole sparsely populated. In the south the people are distributed in infrequent small villages and isolated farmhouses built in clearings in the forest (see Fig. 51). The north is more thickly peopled. Important routes cross the plateau in both directions, as it lies on the Danube route east and west and must be crossed from north to south by the routes between Germany and Italy. These routes are directed towards the best Alpine passes, and the most important is that which leads to the Brenner. Munich is the chief centre on this route, and has become the capital of Bavaria and far the largest town (pop. 681,000). It lies almost in the mathematical centre of the foreland and this is the chief reason which has caused it to become important, for it lies within the infertile gravel country. All routes crossing the plateau from east to west and north to south can easily converge on Munich, and two of the most important European

railways cross at the town : that from Paris to Vienna, which cuts off the bend of the Danube by making straight across the plateau after crossing the Jura ; and that from Berlin to Rome by the Brenner pass. Munich is built on the river Isar, and the water-power of the stream is used for a variety of industries of which the brewing is the most important.

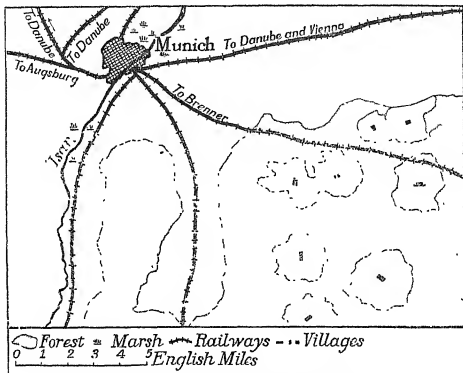


Fig. 51. Forest clearings on the Alpine Foreland (Bavaria).

Next in importance to Munich though far below it in size is Augsburg (pop. 165,000). This has grown up in the next valley, that of the Lech, and is in a position to attract all the routes from the passes west of the Brenner. The valley of the Lech leads to the Danube at a point opposite a break in the Jura (see p. 226) which makes passage easy to the Rhine country, and the road from the Brenner to the north-west passes on from Munich through Augsburg. The position of Augsburg, then, is almost as good as that of Munich, and in older days before the modern development of the German

plain and the growth of Berlin it was the more important town, its importance as a trade-centre dating from Roman times. There is a line of smaller towns along the Danube itself, the most important having grown up where some gap in the Jura heights lets a route through from the north, such as Ulm, Donauwörth, and Regensburg.

*The Jura Heights.* These consist of a scarped ridge running from the southern end of the Black Forest to the western corner of Bohemia, with its high edge and steep slope turned to the uplands of the Neckar and Main and its gentle slope south-eastwards to the Danube. Its high edge where it overlooks the Neckar valley in the south is 3,000 feet high, but gradually decreases northwards to 2,000 feet. Near the centre it is cut into two parts by the low wide valley of the Ries, a very important line of communication between the Danube and the Neckar basin. Limestone being a porous rock into which the rainfall sinks easily, the country is dry and waterless except in the valleys, and not very much agriculture can be carried on. The surface of the plateau between the valleys is sometimes bare, sometimes covered with wood, and can only support a very sparse population. Even this small population often finds it difficult to get water. The villages and tiny towns are confined to the valleys, in each of which there is a series of settlements lying alongside the streams, as in the Cotswold country which, on a smaller scale, closely resembles the Jura.

Where these valleys emerge to the Danube on the one hand, and the Neckar or Main valleys on the other, towns of varying size have grown up, which, though outside the Jura region, depend partly on it for their existence. Standing on the edge of two regions they are the exchange points for the two kinds of country. The three towns Ulm, Donauwörth, and Regensburg of the upper Danube on the Alpine foreland are the largest of these on the one side. On the other side at the foot of the escarpment the biggest centres are Reutlingen, Göppingen at the entrance to the Ulm gap, and Nördlingen



opposite Donauwörth. The towns round the northern section of the Jura are smaller and less important.

The Jura country is unimportant economically except in so far as it offers obstacles to movement between the Rhine and the Danube, which has to seek the river gaps in its high steep edge.

*The Rhine Rift Valley.* We now come to a very different region in the plain of the middle Rhine. Shut in by the Highlands that form the edges of the valley—the original rift walls—the plain has a warm sheltered climate, and this combined with the rich alluvial soil brought down from the Alps makes it a very productive region, one of the richest agricultural areas in Germany. The climate is so much hotter than that of the surrounding lands (70° F. in the hottest month) that almonds and chestnuts, usually Mediterranean fruits, will ripen there.

*Occupations.* As in all flat valleys the land near the river is useless on account of floods and marshes, but away from the stream the soil is very rich, and wheat, maize, tobacco, and hops are grown, and vines on the well-drained slopes towards the mountain edge. These are all very profitable crops and the region is prosperous and well populated. The population is not scattered evenly over the region but is found chiefly in two belts at the foot of the hills with a rather sparsely inhabited area between them (see Fig. 52). This grouping is due to the damp nature of the land close to the river, to the floods, and to the coarse unproductive glacial gravel deposited by the Rhine in two belts on either side of its course. A great deal has been done to regulate the floods of the Rhine but they cannot be prevented altogether. As in the case of the Danube the melting snows of the Alps bring a great and sudden rush of water down the river which it can hardly carry off. A straight channel has been cut down the centre of the windings of the stream which enables the water to run off more quickly, and dykes have been made to keep it in the channel. These precautions also prevent the river

changing its bed, which it did constantly, causing great disasters, before the regulations were undertaken. In spite of this regulation the banks of the river are not suitable for settlement for the first half of its course along the rift, and there are no towns on the Rhine in this part and not many in its lower course.

*Towns and Routes.* The few towns that have grown up on the Rhine in the northern half of the region are very large as

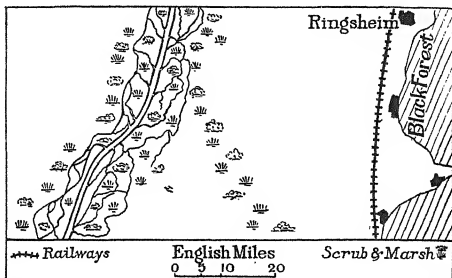


Fig. 52. A small bit of the Rhine plain between Basel and Strassburg, showing the maze of water channels. The straight channel down the centre is artificial. Note the railway and line of small towns along the edge of the rift.

they are river ports, for example Mannheim, and as such of great importance in this country so far from the sea. Smaller towns are found along two other lines, one on each side of the rift, in the belt of denser population towards the edge. The actual position of the towns along these three lines has been determined largely by the natural routes that cross the difficult country on either side of the plain. Where these routes touch the plain the chief centres of population have arisen.

The routes on the eastern side are better than those on the west, for the highlands on this side are more broken and cut up by rivers. No river cuts its way right through the Vosges

to the Rhine and only small streams make their way through the lower hill country of the Hardt that bounds the rift north of the Vosges. On the other hand several rivers flow across the Black Forest to the plain, and north of the forest the long Neckar and Main draining from the foot of the Jura escarpment enter the Rhine rift and open up many important routes. Hence the towns on the eastern side are larger than those on the western edge of the plain, and the largest of all are connected with the Neckar and the Main. In each case there is one town where the river leaves the highland and another

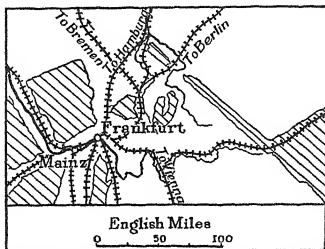


Fig 53. Diagram showing convergence of routes on Frankfurt.

where it joins the main stream of the Rhine. On the Neckar in the first position is Heidelberg and in the second position Mannheim, the corresponding towns on the Main are Frankfurt and Mainz (Mayence).

Heidelberg (pop. 73,000) does not occupy nearly as important a position as Frankfurt (pop. 468,000), and remains a middle-sized agricultural centre of a country producing wine, tobacco, and hops, its importance increased by its university, which was founded in the fourteenth century. Frankfurt lies at the northern end of the rift where the plain widens out considerably and where it is easy to reach the river valleys draining to the Weser, and so to the northern plain and the

North Sea. A large number of routes therefore meet in the plain round Frankfurt from north, south, and east, and this makes it a very important centre for all Germany (see Fig. 53). It is far more than an agricultural centre for the rich region round it, and is a great commercial and banking city for all the countries of central Europe, while manufactures have been developed recently in the neighbourhood. Its importance dates from very early times, for the comparative ease with which it could be reached brought traders to it from all parts of Europe to exchange their goods, and the annual fair at Frankfurt was famous.

Of the two Rhine ports Mannheim (pop. 247,000) at the junction of the Neckar is now much more important than Mainz (pop. 109,000) at the junction of the Main. The river has been deepened as far as Mannheim so that fair-sized vessels can go up so far, and goods for south Germany or Switzerland that once were disembarked at Mainz can now go to the more southerly port and get the benefit of longer cheap water-transport. The chief commodities that come up to the port of Mannheim are grain from overseas and coal from the lower Rhine coal-fields, and from hence they are distributed to the south. Down the river in return goes mainly timber from the forests of the uplands that floats down the Neckar, and salt that is procured from the sandstone regions of the Neckar basin.

The chief importance of Mainz as a port lies in the fact that it is placed near the point where the Rhine leaves the wide rift and enters the narrow gorge cut through the old highlands. In old days the navigation of the gorge was difficult because of the rapidity of the current and the masses of rock lying in midstream at several points. Even now though some of these rocks have been blasted away there is at first only a narrow channel for boats at this end of the gorge, and it is often necessary for vessels to wait at Mainz or at Bingen a short distance lower down the river.

Another very important town, Basel, lies at the extreme

southern end of this eastern side of the rift. It is in fact almost out of the rift on the edge of the limestone of the Jura, and belongs geographically to both regions, but is now politically Swiss. Almost as many routes converge here as on Frankfurt, but Basel has not the same central position in Europe. It is, however, a town of over 100,000 inhabitants. As we have seen, all routes across Switzerland converge on Basel, and amongst them is the most direct route from Italy, namely that over the St. Gotthard Pass. There is connexion eastward by the upper Danube and westward by the important gap between the southern end of the Vosges and the Swiss Jura (see p. 292) that opens an easy way to the valley of the Rhone and so both to the Mediterranean and the Seine basin.

Beside being a route-centre, Basel, by the help of the great water power in the mountains round it, has developed a cotton industry of much importance, which has spread to all the smaller places in the neighbourhood.

The most important break on the western side of the rift valley is that at the northern end of the Vosges mountains where the ground sinks to a pass known as the Col de Saverne (1,300 feet). This pass provides the one easy means of communication between the Rhine plain and the Seine basin and Paris and an important town was bound to grow up in connexion with the route over it. The banks of the Rhine were not suitable for habitation in this district so Strasbourg was founded two miles away on a tributary to the left of the river. The Romans had a camp on this important strategic spot and since that time the settlement has never ceased to grow in importance. The more modern economic development of the town, however, has been disturbed by the fact that it lies on the edge of a region long in dispute between France and Germany, namely Alsace, the south-west portion of the rift valley. Until recently Strasbourg (pop. 175,000) depended for its water communication on a canal joining it with the Rhine on the one hand and on the other with Lorraine and its

iron and coal-fields. The canal makes use of the valley of the Saverne river and tunnels under the higher part of the pass. Now a port has been opened for Strasbourg on the Rhine and river navigation improved up to this point. This is causing considerable increase in the trade of the town.



Fig. 54. Map showing the position of Strasbourg and routes across the Black Forest.

The Rhine rift is a region of great importance for the communications of all western and central Europe. It provides the one easy north-to-south line of communication, while it cuts across the busy east-to-west routes between the Seine and Danube, and thus within it are many great crossing-places of which Strasbourg is one of the most important (see Fig. 54).

Railway communication has been well developed in this region and all the natural routes indicated have railways along them. Two lines follow the whole length of the rift away from the river near the two edges while in the northern half two more lines have been made as close to the river banks as the nature of the ground will allow. This multiplication of lines shows clearly the amount of traffic that goes along the rift.

*The Vosges and the Black Forest.* These two regions are so similar that they may be considered together although they are divided by the plain of the rift and belong to different political powers, the Vosges to France, the Black Forest to Germany. The higher parts of each close to the rift consists of several parallel ranges running north and south 4,000 to 5,000 feet high, with deep narrow valleys between them while on the outer sides long transverse spurs slope gradually to the level of the uplands. The slopes are covered with forests nearly to the top but the highest points rise above tree-level and are grass-covered. These open summits form summer pasture. The rainfall is heavy owing to the height, amounting to over 80 inches in the highest parts; and many rivers have their origin in these mountains. The Danube rises on the slopes of the Black Forest and the Moselle and its chief tributaries in the Vosges.

*Occupations.* In economic character these regions are much like that of the Swiss Jura. Their natural resources are not great. The climate is too bleak for agriculture but the pasture is good, so pastoral and forest occupations are predominant. As in the Alps, although in a much lesser degree, the people move with their flocks to the highest slopes above the trees in summer and the permanent dwellings are down in the valleys. The villages are on the lower slopes, which are cleared, but isolated farms are scattered about the upper slopes to the level of nearly 3,000 feet. Not only is raw timber exported from the forests but the woods give rise to many small industries. Toys and other carved objects are made, especially in the Black Forest. Here also as in many mountainous regions

where movement is difficult, small articles requiring much skill are made, of which clocks are the most important.<sup>1</sup>

As in all highland regions there is a ring of towns round the edge where the mountains become more accessible. Very often the water-power of the highlands is made use of in these border towns, and this is specially the case in the towns round the Vosges. An important cotton industry has grown up in these centres amongst which are Remiremont (pop. 10,000) and St. Die (pop. 21,000) on the west, and Münster (pop. 6,000) and Thann (pop. 8,000) on the east, the water-power being now supplemented by coal. Round the Black Forest industry is not developed on such a large scale, but in the south cotton is also manufactured in several valleys, with their centre at Basel (see p. 230), especially in the valley of the Wiese.

It has been pointed out already that there are no easy routes across the Vosges mountains. The passes are all very high and steep and no railways have been made over them. The Black Forest, however, is cut through by two river valleys that make fairly good routes, the valleys of the Kinzig and Dreisam, and along both of these are railways connecting the Rhine plain with the upper Danube (see Fig. 54).

*The Western Uplands of the Moselle and Meuse-Lorraine.* This region, which is known historically as Lorraine, has a general elevation of 1,000 or 1,500 feet with valleys cut deeply below that level. The rock material is not the same throughout but several different kinds of rock appear, lying in belts, running roughly north and south, and some of these belts produce a more fertile soil than others. The largest proportion of the region is composed of sandstone, a great deal of which is not very productive and is still covered with forests. The sandstone district is cut into two by a narrower belt of soft limestone<sup>2</sup> that lies rather lower than the sandstone and is more sheltered and forms a much richer soil (see Fig. 55).

<sup>1</sup> Cf. the Swiss Jura.

<sup>2</sup> Not Jurassic limestone. It belongs to an earlier geological period, the Triassic.



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<sup>1</sup> Cf. the Swiss Jura.

<sup>2</sup> Not Jurassic limestone. It belongs to an earlier geological period, the Triassic.

This is the chief agricultural and grain-growing region and helps to feed the people of the poorer areas on each side. Beyond the sandstone to the west comes a narrow belt of fertile clay above which rises an escarpment of the harder Jurassic limestone corresponding to the escarpment of the German Jura on the other side of the Rhine, only much less high. The limestone plateau that slopes away from the

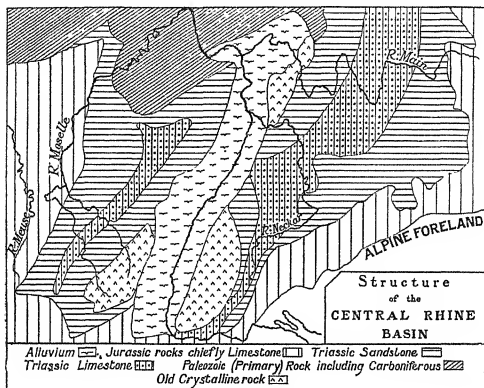


Fig. 55. Structure of the central Rhine basin.

escarpment to the west is thus much less cut off from the sandstone region than the Jura country is from the Main and Neckar, and it can be considered to a certain extent with it. It belongs partly to the Rhine basin and partly to that of the Seine and it will also be considered with the latter (see pp. 307-18). It forms the first of a series of scarped ridges and valleys that surround the centre of Paris and drain to it, but the western part of the Jurassic limestone is drained northward by the

Meuse to the lower Rhine, and movement is easiest in this direction, so its geographical and economic connexions are largely with the Rhine country.

The rivers of this region follow the direction of the belts of rock and flow towards the north, only turning towards the Rhine after they have reached the old Rhine highlands. The Moselle cuts right across the centre of these highlands while the Meuse skirts the northern edge. The Moselle is a larger and more important river than the Meuse. Rising in the Vosges it has a greater volume of water than the Meuse which rises in the porous limestone, and receiving few tributaries is apt to dwindle in the summer, is almost useless for navigation, and has little power. The Moselle, on the other hand, collects many streams descending from the mountains and has considerable water-power and can be navigated by small craft for a long distance. The Moselle passes out of the sandstone region just above Nancy and thence flows along the belt of clay till it turns to cut a narrow gorge in the northern highlands. Along the clay belt its valley is wider and contrasts with the valley of the Meuse which is only a narrow trench cut in the limestone plateau. Hence there are the greater population and the larger towns in the Moselle valley.

*Occupations.* With so much infertile country the agriculture of the region is not on the whole very important. But in the valleys vines can be grown on the sunny slopes, and hops and corn over a great deal of the limestone belt. There is, however, considerable mineral wealth, and a country that was once rather poor and thinly peopled has now become comparatively rich, with spots of quite dense population where the minerals are worked and industries are developing. The sandstone country produces a great deal of salt, as a similar sandstone does in England round Droitwich and Nantwich. A number of small towns in the valley of the Meurthe, as for example Rosières-aux-Salines (pop. 2,000) and Dombasle (pop. 5,000), flourish on the extraction of the salt and the making of soda. Still more important is the iron that is found on the edge of

the Jurassic country and is worked at various centres in the valley of the Moselle. Nancy and Longwy are two of the most important of these iron towns. Thirdly, there is coal found on the northern edge of the region. Along the southern slopes of the old highlands on this side of the Rhine there is a belt of coal measures which produces a fair quantity of coal, though not so much as is found in a similar belt of rock on the northern edge of the highland (see p. 242). The coal is chiefly worked in the valley of the river Saar and is not used to any extent for industries on the spot, but is exported to France.

*Towns.* The chief towns are found along four lines. Along the rivers Meuse and Moselle, along the junction of the Vosges and the sandstone plateau, and along the junction of the sandstone and the intervening belt of soft limestone. The towns of the Moselle are by far the largest. The river and its valley make the chief line of communication in the region. There are no east and west valleys of any size to make movement easy that way, but where the best natural routes to east and west do enter the Moselle valley there the largest of the towns of Lorraine have grown up. The most important route is that which comes through the Col de Saverne from the Rhine plain, and where this reaches the Moselle Valley is Nancy, a great route-centre, and an industrial town, manufacturing the iron of the district. On account of its advantageous position it is also the centre of learning in Lorraine. Though always important, Nancy only became a large modern town after the iron began to be worked towards the end of the nineteenth century. It has now over 100,000 inhabitants. Another important Moselle town is Metz (Mettis, pop. 70,000) some way north of Nancy. This stands at a point where the valley widens into a large fertile basin. Here a tributary stream from the south comes in, and in the angle between the two rivers, an excellent defensive position, Metz was placed. Its natural communications east and west are not so good as those of Nancy, but its excellence for defence has always made it of strategic

importance, and it has been fortified ever since Roman times. It has not the population of Nancy which is of far more economic importance.

The Meuse towns are much smaller. In the narrow steep-sided valley there is not much room for town development and the region which is mainly pastoral is not rich enough to support large centres. It is outside the industrial area of Lorraine. Verdun (pop. 20,000) is the largest of the Meuse towns and like Metz of more strategic than economic importance. The towns in the north of the valley, where it approaches the industrial region of the north French coal-fields such as Mezières-Charleville (pop. 25,000) the double town on both banks of the river, are increasing in size and importance.

Though the region through which the Meuse flows is not of much economic importance its valley has always formed an important European line of communication, opening a way between the Rhone valley leading from the Mediterranean and the Low Countries leading to the North Sea. Consequently a great deal of traffic has passed along it throughout historical times and the towns, all long established, have flourished more on that traffic than on the produce of the region. The towns along the junction of the plateau and the Vosges have been noticed already in connexion with the latter region (see p. 233). Those at the junction of the sandstone and limestone belts are more purely agricultural centres and are smaller. Such are Sarreburg in the Saar valley (pop. 10,000) with a considerable trade in grain, and Rambervillers (pop. 4,000) on the upper Meurthe.

*The Uplands of the Main and Neckar.* This region is similar in character and formation to that of the Moselle. There are the same three belts of rock, the two of sandstone separated by one of soft limestone (see Fig. 55). The sandstone is likewise mostly forest-covered and sparsely peopled except in the valleys which are deeply cut and therefore sheltered, while the limestone belt is more generally cultivated and more densely populated. The great difference lies in the

river system which, in contrast to that of the western uplands, facilitates movement across the region, and hence routes are much more developed and correspondingly there is a larger number of good-sized towns, forming route-centres. The Neckar and Main and most of their tributary streams flow right from the foot of the Jurassic escarpment to the Rhine plain, and there is no difficulty in finding an easy route across. The Neckar valley is more useful than that of the Main because the course of the latter river is so circuitous (with bends like a W) and the supply of water is less than in the Neckar, and it is scarcely navigable for barges above Frankfurt, while the Neckar is navigable for a long distance, up to Cannstadt.

*Occupations.* This region has not the amount of mineral wealth found on the other side, though salt occurs in the sandstone. Vines and hops are the two most important crops and the making of wine and beer very general in all the towns of any size. A great deal of market-gardening is also done and intensive agriculture. Much of the less productive sandy area is covered with woods, often of Scotch firs, and this gives rise to various wooden industries of which toy-making is one of the most important, the toys being exported in great quantities to other countries. In modern times a number of other manufactures have been developed in the region by the enterprise of the people, industries such as can be established almost anywhere and do not require special conditions or the presence of minerals in large quantities, namely the making of chemicals and glass, leather working, and printing.

*Towns.* The number of fair-sized towns is great, as has been pointed out, the result of all this industry and enterprise, in addition to the fact that a number of important routes cross this region between the Rhine and Danube and hence a number of route centres have been required. Some of these route-centres at the more important crossings have now developed industries; others remain agricultural markets for the vine and hops. As on the other side, in the Moselle country, there are lines of towns along the junctions of the

different formations but the largest centres have developed in the main river valleys. The Neckar valley is dotted throughout its length with flourishing growing towns.'

One important point is the head of barge navigation marked by Cannstadt, once a separate town, now the commercial suburb of Stuttgart. Stuttgart, the chief town of the Neckar region, is placed in a side valley a little way back from the main river. Its official position as capital of the state of Württemberg has caused it to outstrip other, often better situated, Neckar towns, and though of modern foundation it is a large town of over 300,000 inhabitants. The head of steamer navigation some way lower down the Neckar is marked by Heilbronn (pop. 43,000), which is quite an important route-centre as several side valleys come into the main valley near this point, and its manufactures, of various kinds including iron, are growing and flourishing. Heidelberg where the river emerges on to the Rhine plain has been noticed already (p. 228) in connexion with that plain.

The largest towns on the Main are at points where routes from the south enter the valley. Würzburg (pop. 90,000) near the southernmost bend of the river is one of the largest. It is a centre for the wine trade of this region of vines. The largest town, however, of the Main basin, and the one that ranks with Stuttgart, of the Neckar, in size and importance, is not on the river Main but on an insignificant tributary. This is the famous mediaeval town of Nuremberg (pop. 392,000). It lies in an unproductive sandy and wooded region and was originally entirely a route-centre. It commands a number of routes of high importance. Its natural position is far better than that of Stuttgart and it has grown entirely from natural and not artificial causes. It lies halfway between the Danube and Main where the two rivers approach each other most nearly, and is thus on the chief line of communication between north and south. It lies opposite one gap in the Jura escarpment and is within easy communication with two other gaps and can be reached therefore from many different directions. It was



one of the most important commercial cities of the Middle Ages and is the best example of the picturesque architecture of German towns of that age. The old walls are still standing, and the modern development has not spoilt the character of the old town. It is the centre of an extensive toy trade fed from the villages in the forest round about, and manufactures besides glass and chemicals.

*The Highlands of the Lower Rhine.* These highlands stand up well above the Rhine plain and the uplands all around. The general level is about 2,000 feet above the sea though some of the higher part runs up to 3,000 feet. The surface does not consist of ridge and valley like the Vosges and Black Forest but is composed of high, level stretches cut at intervals by deep gorge-like valleys. The Rhine makes a deep cut right through the centre, and the lower Moselle on the west, and a shorter river called the Lahn on the east, make another similar cut at right angles to the Rhine, so that a complete passage is opened both ways across the region dividing it into four blocks, each of which has its own name. The block north of the Moselle called the Eifel is continued farther west than the rest, becoming gradually lower, and this lower western extension is known as the Ardennes. The Ardennes lie across the lower course of the Meuse, and the river has cut its way through in a narrow gorge like that of the Rhine, though not so deep.

*Occupations.* The highlands are all poor regions. Woods and peat bogs cover a good deal of the surface and the climate is too bleak for agriculture. Only potatoes and a little rye will grow on the high plateau and the pasture is poor so that the population is very scanty. The life of the region is concentrated in the chief valleys, each of which forms an important line of movement. The towns are all down in these deeply-cut valleys, and on the plateau there are very few villages even, and only a scanty number of isolated dwellings.

*Routes and Towns.* This highland mass forms a great obstacle to movement, between the lower and the middle Rhine.

The great amount of traffic in the rift valley that requires four lines of railway as well as the river route to accommodate it, has either to be confined in the narrow Rhine gorge or to flow round the edges of the highland. The Rhine gorge is therefore much congested with traffic, and the busy movement and life on the river contrasts with the stern character of the rock walls and the forested, sparsely inhabited country round. In places the river fills the whole width of the gorge, in others there is an extremely narrow belt of alluvium alongside the river on which small villages and townlets have found a place, and wherever possible the slopes of the gorge behind these are terraced for vineyards. At one point near the middle of the gorge where the Moselle and Lahn enter the Rhine there is a little basin of level land formed by the deposits of the two rivers, giving space for a larger settlement, and as four very important routes meet here there was need for a good centre. Coblenz was founded by the Romans in this lowland basin in the first century. It has had a stormy history until recent times owing to its important position on such well-defined lines of movement both north and south and east and west. It is not even now a large town (pop. 58,000) though an important one: the unproductive character of the country around prevents its having any very great amount of economic development.

Another town with an equally ancient history, the town of Trèves (pop. 58,000), stands at the other end of the Moselle gorge, where this river enters the highland. At this point the Saar tributary from the south and another from the north enter the Moselle, so that there is a meeting of routes at Trèves also. The town, lying near the iron and coal-fields of Lorraine, has developed some modern industry and is a more manufacturing town than Coblenz.

The Lahn gorge is smaller and less important than that of the Moselle and its towns are unimportant. Giessen (pop. 31,000) stands at the eastern entrance to the gorge, corresponding in position to Trèves. Giessen controls also a north-south.

route by a depression leading to the Main at Frankfurt (see p. 228).

The Meuse gorge through the Ardennes has even less room for settlement. There is a slight widening of the valley near the centre and here the chief town of Dinant grew up, but it only comes within the rank of small towns of less than 10,000. A few small mining centres, such as Givet (pop. 5,000), have grown up in the upper part of the valley, as a little iron and copper are found in the Ardennes and the working of these increases slightly the population of this poor region. At the northern mouth of the gorge where the Meuse leaves the Ardennes is the important fortress town of Namur, now also a modern manufacturing town, commanding several lines of route (see p. 263).

Along the whole northern edge of these highlands are coal-measures and iron deposits, and large towns have grown up to make use of the coal, but as these are situated on the plain at the foot of the high ground, they and the whole industrial development in this area will be studied in connexion with the plain.

*The Northern Uplands.* Beyond the lower Rhine highlands to the east lies a lower upland much like the uplands of the Main, formed of the same sandstone and limestone, but with wider and more open valleys. It is cut off from the region of the Main by two great masses of volcanic mountains<sup>1</sup> rising to 2,000 and 3,000 feet above sea-level, and round these great obstacles the routes between the two regions have to wind their way. The surface of the upland is also diversified by two lines of heights that run in a north-westerly direction across it from the northern corners of Bohemia. The Thüringerwald and the Harz mountains are the highest parts of these heights. The Thüringerwald divides the rivers draining to the Weser from those draining to the Elbe; it is not, however, very difficult to cross as there are several breaks in it offering easy routes. To the west of the Thüringerwald the country has

<sup>1</sup> The Höhe Rhön and the Vogelsberg.

long been known as Hesse, that to the east as Thuringia. These are historical names, but are useful to distinguish the two parts of the region. The rivers of Hesse, all flowing northwards, have cut out valleys that are very important for the traffic that, rounding the lower Rhine highlands to the east, wants to find the most direct way between the south and the coast of the North Sea; while the valleys of Thuringia lead to the Middle Elbe, the plain round Berlin, and the Baltic coast.

*Occupations.* The country is nearly all agricultural. A good deal of it is not very productive and is covered with woods, but some of the wider valleys, especially in Thuringia, are very fertile. It is too far north for the vine to flourish, but cereals, fruits, and vegetables are grown. There are two small areas in Thuringia in which there is some mineral wealth. One is the Harz mountains, on the slopes of which copper, iron, and some silver are found. The second area is much more important. In the south, where the land begins to rise towards the mountain border of Bohemia and older rock comes to the surface, is a coal-field, not a large one, but producing enough coal to make this southern region industrial rather than agricultural. Iron, which is close at hand in the Harz, is the chief manufacture, but cotton comes next in importance. The Thuringian portion of the uplands, therefore, has the denser population; two dense patches are seen in the two mineral areas, while the very fertile open valley that runs along the western side of the Harz has a greater agricultural population than most of the region.

*Towns.* The towns are of three kinds, agricultural centres, industrial centres, and the more purely route centres. The largest of the agricultural centres is the town of Erfurt (pop. 136,000) lying in a fertile basin of red marl near the centre of Thuringia, in which much market-gardening is carried on. It is in a line with a gap in the Thüringerwald and so is well situated for communications. The industrial centre of the coal-field area is Chemnitz, a great manufacturing town of

over 300,000 inhabitants—a smoky, unattractive place with a number of industrial suburbs.

The route-centres are many. It has been seen that several important lines of communication cross the uplands along its many valleys. This in itself necessitates many settlements. Then the region is divided into many small political subdivisions, some of which are based on the possession of one or other of these route-ways. This has led to great rivalries to secure traffic to the towns of each state and the careful fostering of many centres, which as a result are roughly of equal size and importance, and none very large, rarely having more than 50,000 inhabitants. Cassel, however, by reason of its superior position, has outstripped the others. The routes from the south, which start at various points to pass round and between the highlands that border the basin of the Main, gradually converge towards the north, where the valleys draw together to enter that of the Weser just before it emerges on to the northern plain. Cassel stands at the point of convergence, has many routes at its command and is an important railway junction with 170,000 inhabitants. Examples of the smaller centres of this class are Göttingen in the Leine valley, directly south of Hanover (pop. 35,000), and Fulda (pop. 17,000) in the gap between the volcanic masses of Rhön and Volgelsberg.

*Bohemia.* Bohemia and its surrounding mountains are formed of older rock than the other parts of central Europe. All, except the north-east corner, is composed of old Archaean rock, but in this corner, which lies lower than the rest of the plateau, there are younger sedimentary deposits. These weather more easily than the Archaean rocks and have wider valleys and greater depth of soil, and this is the most fertile part of the country.

The region with its symmetrical border of mountains thickly covered with forests is markedly separate from the rest of the highlands of central Europe, and self-contained. The rivers all rise within the mountain border and flow towards the centre,

where they gradually coalesce to form the main stream of the Elbe, which finally carries the whole drainage of the country out through a narrow gorge in the north-east corner on to the northern plain. Although Bohemia is a rugged plateau, the convenient direction of the drainage, forming valleys that lead from all parts of the region to the centre of the country, makes communication easy within its borders. Communication with the rest of Europe is not so easy, but on the south and west it is less cut off than on the other sides. The southern border is more broken and the western mountains have a few easy gaps over them; and there is more connexion in these directions.

The broken southern border leads to the Moravian basin, a hilly belt of land drained by the river March (Morava) separating the Bohemian plateau from the Carpathians and allowing easy passage between them. It is a small but important belt of country, as it leads down to Vienna on one side and to the Moravian gate on the other.

*Occupations.* The greater part of the country is too high and cold for an important agricultural development. In the higher parts of the south and west only oats and potatoes are grown. In contrast, the north-east is very fruitful. Here wheat and hops are raised and a good deal of sugar-beet (which needs a good soil), while the vine flourishes on the most favourable slopes. But the chief wealth of Bohemia lies in its minerals. In the north-west, coal, iron, and silver are found, Plzen (Pilsen) being the centre of this mining district; and in the south-east are more coal and iron, the coal-measures of this district continuing over to the other side of the mountains into Silesia. As a result of all this mineral wealth, industries of various kinds have been recently developed, amongst which that of wool manufacture is important in the region of the eastern coal-field. Sugar is also manufactured, and beer is made in large quantities in the hop-growing region of the north.

*Towns.* The towns, with the exception of the capital Prag,

are not at all large. The industries are not concentrated in a few large centres, but distributed in a number of middle-sized towns. The greatest number have grown up in the richer north. In the south, where there are fewer minerals and the agriculture is poorer, they are few and small.

The largest town has naturally grown up in the centre of the country where the routes from all parts meet. Prag (Praha) is in the valley of the Moldau near its junction with the Elbe and just where the fertile northern country begins. It is both the natural route-centre and the agricultural centre, and has become the industrial centre of the country, combining all its activities; and it has not far short of 700,000 inhabitants. No other town comes near it in size. Pilsen, the next in size and importance, the centre of the mining district of the north-west, with an extensive brewing industry, has under 108,000 inhabitants. Pilsen, like Prag, has been important throughout the ages, as it lies on a very important route. Near the middle of the western border mountains there is an easy pass, only 1,500 feet above sea-level, lying close to the northern bend of the Danube. This route has been one of the historic entrances into Bohemia, and Pilsen stands half-way between the gap and the position of Prag, at a point where three valleys meet, so it is a route centre as well as an industrial town. Along the foot of the northern mountains in the valley of the Eger, a sheltered fertile valley with minerals, especially lignite, in the neighbourhood and hot springs, there is a line of towns, small mining and industrial centres with some health resorts such as Karlsbad (Karlový Vary, pop. 111,000).

The Moravian basin with its easy natural means of communication in many directions has given rise to a larger industrial centre, the town of Brunn (Brno, pop. 122,000). It is placed where the valley of the Zvittava leaves the plateau and widens out in the more open country of Moravia. It has been of historical importance, as it controls an entrance into Bohemia easily reached from Vienna, its strategic value being

increased by an isolated hill rising nearly 200 town and forming a natural fortress. Now ; woollen goods in large quantities and has a manufactures, including that of machinery.

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*Peoples.* Just as Bohemia is strongly marked off geographically from the rest of central Europe north of the Alps and Carpathians, so it is distinct racially. The region is, like the Carpathian mountains on its southern border, mainly peopled by a Slav branch of the Alpine race, the Chekhs, a people related both in origin and language to the Slovaks of the Carpathians. In spite, however, of the barrier to the north, a German population has been making its way into northern Bohemia during the last four centuries and a mixed population is found in this part of the country, but the centre and south is almost purely Chekh. Released from Austrian control in 1919, to which it had been subject since the early sixteenth century, Bohemia forms part of the Chekho-Slovak republic (see pp. 271, 272).

#### THE NORTHERN PLAIN OF CENTRAL EUROPE: NORTH GERMANY, DENMARK, HOLLAND, BELGIUM

*General Character.* The second natural region of central Europe north of the mountain belt extends without a break from the lowlands of Russia along the edge of the Baltic and North Seas. The whole, as has been said, is an alluvial plain formed largely of glacial material, brought partly from the north by the Scandinavian glaciers and partly from the south by those of the Alps. The soil, though alluvial, is not rich except where the larger rivers have deposited a newer layer of fine material. Over the rest of the region the soil is poor and hard to cultivate. The country is mostly low-lying, apt to be badly drained, and marked by few heights. The surface is covered with wide expanses of marsh separated by sandy stretches. Throughout the course of time draining and reclaiming of the marshes has been going on slowly, but much



are, in fact, useless still. The existence of these marshes has influenced the history of the plain to a great extent. Being impassable in their natural state, they have divided first different tribes and later different states, protected them from each other, and kept them distinct.

In the south, where the land rises towards the uplands, the country improves very much; it is better drained and enriched by the soil washed down from the hills. This richer southern strip is marked off from the rest of the plain by a narrow broken line of hills running parallel to the edge of the uplands and forms a natural sub-region. These dividing sandy hills are Lüneburger Heide, Fläming, and Lusatian Heights (see Fig. 50). North of this the plain is again divided into a central and a coastal belt by a low, lake-covered plateau known as the Baltic Heights (see p. 14), which extends from the eastern end of the Baltic area as far as the mouth of the Elbe (see Fig. 50). The north-easterly portion of these heights which edge the Russian plain have been considered with this plain; the part included in central Europe is cut off from it by the wide valley of the Memel.

West of the Elbe mouth the plain narrows, the threefold division disappears and an unbroken coastal plain is left stretching from the uplands to the sea.

These different parts of the plain each form a separate sub-region, though there are a great many characteristics common to all of them. The four great rivers, Weser, Elbe, Oder, and Vistula, flowing from the uplands, cross all the different sections of the plain, connecting each with the sea. Communication between each river is easy by canal, and the transport question for the whole region is one of little difficulty. The rivers are wide and slow flowing and navigable nearly all the way across the plain except during the heart of winter.

The Elbe is the most important of the rivers. It drains the whole of Bohemia as well as the central part of the plain, and its outlet is to the North Sea and not to the nearly land-locked Baltic. Ocean-going steamers can get 70 miles from

the mouth of the river, and it opens up communication with all the most important parts of the region east of the Rhine. Unfortunately the slowness of the flow of the river over the flat plain causes widespread floods, especially during the melting of the ice and snow in spring. In spite of this, an enormous amount of traffic goes up and down the Elbe.

*Occupations.* Taken as a whole, the plain with its marshes and its generally poor soil is sparsely peopled, but the southern region supports a much denser population than the rest. Not only does the ground produce more, but in parts the coal of the upland edge allows of easy industrial development. Over the rest of the plain the absence of minerals makes the chief occupations agricultural in character. A good deal of the land is useless for cultivation and is covered with hardy trees such as the Scots fir. Still more is fit only for pasture, and on most of the remainder only the hardest cereals, chiefly rye and potatoes, can be grown. In recent years it has been found that sugar-beet can be grown on the best of the soils in the middle part of the plain, and the value of this crop has increased the prosperity of the region very considerably.

### The Natural Sub-Regions of the Plain

Within the great plain of central Europe there can be distinguished, as has been shown, five different sub-regions (see Fig. 50) :

- (1) The southern belt.
- (2) The central belt.
- (3) The Baltic Heights.
- (4) The Baltic coastal plain.
- (5) The North Sea coastal plain.

*The Southern Belt.* This extends from the Carpathian foreland to the river, Weser, where it merges into the North Sea plain. It contains the upper courses of the Oder and the Elbe and a tributary of the Weser (Aller). As already explained, it is a fruitful country in which cereals, including some

wheat and much sugar-beet, are grown, and in which there are many orchards. In the south-east, in the valley of the upper Oder, a great deal of manufacturing is also carried on. The coal-fields of the eastern side of Bohemia extend over into this region (Silesia), and the central part has become a crowded industrial area. Zinc and other minerals are found in large quantities on the Silesian slopes of the mountains. Textile trades are very important. A good deal of wool and flax is produced locally, and more wool and cotton for manufacture comes easily from overseas by way of the Elbe and Oder. The western part of the belt drained by the Aller is the least productive.

*Towns.* There are naturally a number of prosperous towns in this region. The chief of these are situated along a line near the foot of the uplands and combine the properties of agricultural (or industrial) and of route centres, their actual site being usually determined by position of routes across the uplands from the south. This southern belt of valleys forms a great line of communication between east and west, of all the more importance because the plain to the north of the dividing line of hills is frequently made impassable by the marshes. Hence where routes from the uplands come out into this belt important cross-roads are formed and large centres have grown up. The chief of these, going from east to west, are Breslau, Leipzig, and Hanover.<sup>1</sup>

Breslau, besides being the centre of the fertile plain of Silesia, is a meeting-place of a number of routes—one from Vienna by the easy Moravian gate, one from the plain of Hungary by the Jablunka pass over the Carpathians (see p. 206), one from Bohemia through a gap in the border mountains, and those from west and north along the plain (see Fig. 56). Breslau has a long history as a trade-centre, being a place where west and east meet. Now it is also a centre for the industries of the adjacent coal-field area and has various manufactures of its own, of which that of machinery stands first.

<sup>1</sup> Other important towns on this line are Dresden, Halle, and Brunswick.

Leipzig, where all the more central routes meet, is even more important, though the size of the two towns is much the same, both having well over 400,000 inhabitants. All the routes that cross the Thuringian uplands converge on Leipzig, so that through this junction the Danube and middle Rhine

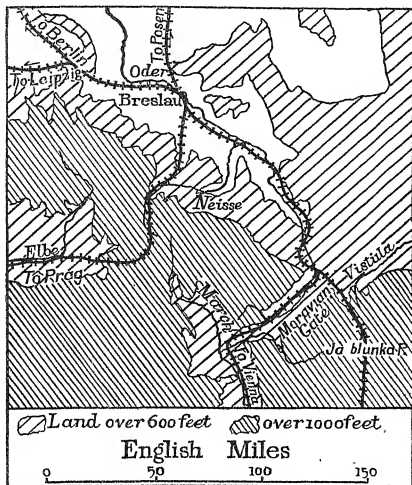


Fig. 56. Map showing routes converging on Breslau.

are connected with the northern plain and its capital, Berlin. Like Breslau, Leipzig was an historic trading-centre with a great international fair, and like Frankfurt on the Main it has become important in international banking on account of its central position. Its excellent position has helped also to make its university famous.

Hanover (pop. 422,000) marks another crossing of routes. The Leine, on which it stands, has cut a direct north-south valley across part of the Thuringian uplands, and the best route from the port of Hamburg to Frankfurt-on-Main and the middle Rhine is by way of this valley. At the point where the valley emerges on to the plain Hanover is situated, about half-way between Cologne and Berlin. The coal of the neighbourhood has enabled the town to become a modern commercial as well as a route centre.

*The Central Belt.* The central belt, extending from the low plateau of Poland to the mouth of the Elbe, is above all a land of rivers, streams, lakes, and marshes. In the central part especially, between the Elbe and the Oder, it gives the impression of a land of many waters. Woods abound here too in the sandy areas which are useless for cultivation. The best lands are found just west of the Elbe and east of the Oder, where it is drier. Rye and potatoes are the chief crops, and lately sugar-beet has been grown wherever a slightly better soil allows of it; but it cannot be grown to the same extent as in the southern belt. This is altogether a poor region, although it contains the capital of Germany, and, having an outlet to the North Sea by the mouth of the Elbe, has within its limits the chief port of central Europe. It is not a district that can in general support a large population, and there are not many positions suitable for towns, which only occur at long intervals, while the villages between are often very poor.

*Towns.* In such a land of waters the crossing-places of the rivers were looked for as places for settlement, where some narrowing of the bed or greater hardness in the banks makes a good and firm site. All the more important towns are on such crossing-places. Frankfurt on the Oder, Magdeburg on the Elbe, and Posen on the Warta are the three chief ancient settlements; Berlin is of modern growth. The chief east-to-west road along the belt crossed the rivers at these three points, and they were early trading-centres. Frankfurt (pop.

71,000) was the head of important navigation on the Oder and the distributing centre for overland traffic, but it lost its predominance with the cutting of canals between the Elbe and the Oder and the consequent increase in water transportation.

Magdeburg has always remained important in spite of having been destroyed during the Thirty Years War—a fate entailed on it by its excellent strategic position—and has grown into a large modern commercial town with nearly 300,000 inhabitants. It is situated on a crossing-place of the Elbe at the point where the river changes its direction, turning northwards and making a gap in the line of hills that divides the southern from the central section of the plain, so that routes from all directions collect at Magdeburg to cross or to join the river. It is an important collecting and distributing centre for the interior of Germany. Imports from overseas such as coal and petroleum come up the river to Magdeburg and are distributed from there, while one of the most important things sent down the river in return is sugar manufactured from the beet grown in the fertile belt south of the town. All raw material is easily obtained by river and rail, coal is not far off, and there are many manufactures, including shipbuilding.

The chief modern town of the plain, Berlin, has very little in the way of geographical position to account for its growth. It is not on an important waterway and lies in a district of forest-covered sands and marshes. It does, however, stand midway between the two great waterways of Elbe and Oder, and canal connexion was easily made with both. It stands midway also between north and south of the plain; hence it was easy to bring all the routes to this point and to make it the capital city. The water route from the North Sea coast at Hamburg to Breslau passes through Berlin almost exactly half-way. Berlin owed its first importance to its possibilities for defence among the rivers and lakes of the region, which made attack by an enemy very difficult. An island in the Spree at this point made the crossing of the river easy, and hence its choice for a settlement. It was in the fifteenth century that the rulers

of Brandenburg—the central part of the plain—chose this little trading settlement for their chief town and gave it special privileges. The later German emperors made added efforts to further the growth of the town, but it remained relatively small till modern scientific developments enabled manufacturing to be established there, the ease of transport making it possible for industry to pay well although all the necessary raw materials have to come from a distance. In the beginning of the nineteenth century Berlin had only 200,000 inhabitants, but by the end it had 2,500,000 and by 1925 over 4 millions.

Hamburg, at the North Sea end of the central belt, was a less important port than Lübeck (see p. 258) before the discovery of America and the consequent development of trade across the Atlantic. The mouth of the Elbe is not at all easy to navigate on account of sand banks, and the port is not naturally a good one, but the position for trade on the North Sea coast and at the mouth of a river offering such excellent inland communications was so good that difficulties of site have been overcome. The Elbe breaks into many channels, and is bordered by wide marshes for many miles above its mouth, and is difficult to cross. The marshes of the lower valley are usually ten miles wide, but at one point, where Hamburg is placed, the higher sandy country comes close to the north bank of the most northerly channel and makes firm ground for building (see Fig. 57). The large and flourishing town of about a million inhabitants that has grown up on this unpromising site is very isolated, and there is no other town on the river for a long distance up the valley. It will be clear from what has already been said that the importance of Hamburg has little to do with the products of the country behind it, which is exceedingly poor, but is due to the fact that it stands at the point where it is easiest for raw material from overseas for the industries of Germany, and also the additional food-stuffs required, to enter the country and to be distributed over it. Hence the largest proportion of the imports of Hamburg consists of coal (from Britain) and wheat, which does not grow

to any large extent in this part of Europe. Its exports are very various, including all sorts of manufactured goods, of which sugar from the beet factories normally ranks well first. Salt and timber from the interior are also important among the exports.

*The Baltic Heights.* These are low, lake-covered plateaus rising in the highest parts in the east to 1,000 feet but mostly well below that level, and cut into sections by the lower

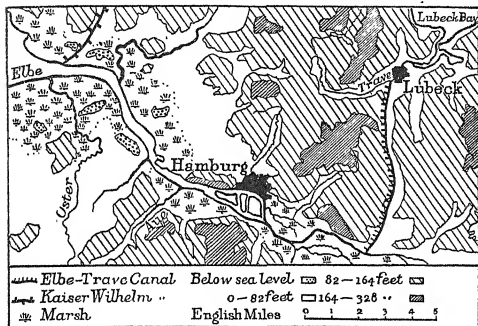


Fig. 57. Map showing positions of Hamburg and Lübeck.

courses of the Vistula and Oder. The soil is thin and poor and the region can produce little. It supports a scanty population cultivating rye and potatoes. There are only a few quite small towns, the chief being the little capitals of the unimportant political states that exist in this region, such as Schwerin and Strelitz. The attraction of the lakes and the pine-scented air of the forests brings summer visitors, for whom new settlements have been made, which add to the population.

Though the plateaus are of no great height, their lakes and forests have made them a real hindrance to movement between



the central part of the plain and the Baltic coast, so that traffic is concentrated in the valleys of the Vistula and Oder which break through the barrier. Two railways have been taken across the lower western part of the plateau from Berlin, but for the most part the railways skirt the heights.

*The Baltic Coastal Plain.* (1) *Eastern part.* The plain is divided into two parts by the middle section of the Baltic Heights, which runs down to the coast just west of the Vistula delta. The smaller eastern division, belonging to west and east Prussia, suffers from a very severe winter climate (the January temperature of Tilsit is 25° F.), which closes the ports with ice for a considerable period and prevents their being as important as those of the west. The soil is not very productive, except in the delta of the Vistula, where tobacco, sugar-beet, and wheat can be grown. This is the only area in the northern part of the plain where the land is good enough for wheat. Over the rest of the region, much of which is sandy, the chief crops are rye and potatoes, with some flax (cf. the Baltic plains that edge the Eastern or Russian lowland). In the river valleys, however, the pasture is good and cattle and horses are kept.

The coast is peculiar. Long sand dunes or sand spits have been formed by the action of the currents in the Baltic, and shut in large areas of water. These lagoons are shallow, as they are being constantly filled up by débris brought down by the rivers, and, being less salt than the open sea, freeze easily. The harbour of Memel, for instance, behind one of these spits, is closed by ice for 142 days in the year, while the open sea outside is only obstructed by ice for 12 days.

*Towns.* The population is somewhat less sparse than on the Baltic Heights, but it is not dense, and the only towns of any size are the ports. These are much larger than would be expected from the character of the region, their size being due to the fact that they are the outlets for parts of the plain of Russia and all of the wide region behind the Baltic Heights—the basin of the middle Vistula. Much timber and grain comes

down from the interior for export. The two largest towns are Danzig (pop. 234,000) and Königsberg (pop. 280,000). The main arm of the Vistula formerly ran out by the site of Danzig, and when it left this valley and took its present direction the position of the town became less favourable for inland communication, though a canal has been cut giving it a new outlet on the coast. It has, however, the line of communication by the Vistula valley behind it, and it is the second largest port of the area and has an important shipbuilding industry.<sup>1</sup>

The whole of this section of the plain is much cut off from intercourse with the rest of Europe, and, outside the large ports, remains an unprogressive poor agricultural country with a low standard of education. The same is true of the Baltic Heights, which are also, by reason of their geographical position and character, out of the way of the main lines of communication.

(2) *The western half* of the Baltic plain is bisected by the Oder and has very important connexions with all central Germany by way of this river and its valley. At its western end the plain turns abruptly northward and forms a narrow peninsula standing up as a barrier between the Baltic and the North Seas. Between this peninsula of Jutland and the southern end of the Scandinavian Peninsula lie a number of islands—detached portions of the plain—that serve a double purpose in protecting the passage into the Baltic and in facilitating the passing from this peninsula to that of Scandinavia. The eastern part of the Jutland or Danish peninsula is similar to the Baltic plain west of the Oder, while the west coast resembles the rest of the North Sea border, but as it stands so much apart, running northward between the seas, it may be treated as a separate unit.

The Baltic plain improves as you go westward. East of the Oder it is still sandy and poor and much like the section just considered. Only the hardier crops will grow, and the potato

<sup>1</sup> Danzig formerly a German port is now a Free City having economic relations with Poland, which country has no outlet to the sea.

is a staple crop. West of the river the soil is better and the coast changes. Instead of being low and sandy and bordered by dunes, it rises in gentle cliffs and is much indented with marked inlets that become fiord-like in the Danish peninsula. In addition to the hardier cereals sugar-beet can be grown and occasionally wheat.

*Towns.* The sea is frozen for a shorter and shorter time towards the west, till where the coast turns northwards towards Jutland it is practically open all the year, and a number of flourishing ports have grown up on the inlets. The best positions along the coast are at the mouth of the Oder and at the western extremity, where the land passage to the North Sea is shortest, a passage that has been easily canalized along two lines. Lübeck occupies the best position in the west at the point where the coast changes its direction. With its practically open port (it is kept open now by ice-breakers in midwinter) and easy communication with the Elbe (see Fig. 57) and thence both west and south, it grew to be an important port in very early days when the central and eastern part of the Baltic plain were little developed and when the marshes of the Elbe mouth made it difficult to navigate that river. From the thirteenth to the fifteenth century Lübeck was chief amongst the centres of the famous northern trading league known as the Hanseatic League which disappeared in the sixteenth century. In modern times Lübeck has lost much of its wider European importance to Hamburg on one side and Stettin on the other, which have the large rivers behind them, but it still does a good deal of local trade round the western Baltic. A canal cut across the low neck of the peninsula connects it by water with the Elbe.

Stettin at the Oder mouth has in modern times grown to be the chief Baltic port. This is partly due to its being the port for Berlin, and its great increase in size and importance (it has now over 250,000 inhabitants) has only occurred since the rise of Berlin and of the German Empire in the nineteenth century. Besides being a great port, Stettin is an important shipbuilding

centre, for which industry it has every facility in the estuary of the Oder; it also manufactures the products of the region with imported coal. The making of sugar from the beet and the distilling of spirit from the potatoes are the chief of these manufactures, and both these commodities are exported, as well as the timber and grains from the farthest interior.

The port of Kiel (pop. 212,000) on the west, on an inlet to the north of Lübeck, has recently become nearly as large in population as Stettin, though it has far less economic importance. It has grown entirely for strategic reasons and was made a naval station and dockyard because from here a ship canal to the North Sea could be easily cut.<sup>1</sup> Before it was made a naval arsenal it was a small trading-port of no special importance.

*The Peninsula of Jutland: Denmark.* This peninsula, the northern part of which with the islands off the coast form the kingdom of Denmark, contains within its narrow limits three different kinds of country. On the west is a land of sand-dunes and marshes, very unproductive: on the east is an undulating plain of a more productive character lying behind a steep indented coast, and in the centre is a belt consisting of flat stretches of heath and bog. This belt was formerly quite useless, but now the heather has been largely stripped off and the ground ploughed up; the bogs have been reclaimed and utilized with much effort. But the best land is on the eastern plain and the islands, which are like it in character, and on this side is found the greatest amount of agriculture and the greatest proportion of the population. Cereals and sugar-beet are grown, but here, as over the whole peninsula, the damp climate and limited sunshine make pasturage more profitable than tillage, and dairy-farming is the chief occupation. Rather limited natural resources and lack of space has led the Danish people to make careful use of what they have, and they have developed the best methods of dairy-farming in Europe. Butter is the chief product of the country and the chief export,

<sup>1</sup> The Kiel canal was cut in 1895 and enlarged in 1914.

while bacon and eggs, which usually go with dairying, come next in importance. All are exported largely, especially to Britain.

*Towns.* The population being densest on the east and especially on the islands, it is here that the chief towns have developed. Only one—the capital, Copenhagen—can be called a large town. It occupies an important strategic position on the Sound that separates the Island of Zealand from the Swedish coast and is the best entrance to the Baltic Sea. For this reason Copenhagen has long been an important fortress. For the same reason it has been attacked and destroyed many times since the twelfth century when the fortress was first built; but since the early nineteenth century it has grown rapidly to be a town of over half a million inhabitants. It is the great centre of life for all Denmark, commercially, educationally, and socially.

There are no inland towns and only a few coastal settlements containing over 20,000 inhabitants. The chief town on the mainland, the port of Aarhus, has only 76,000 inhabitants. The other ports are placed up the inlets, but Aarhus is on the open coast and can be reached by larger vessels and so has become more important than the rest. It exports a good deal of dairy produce, though the large quantity of butter and eggs for the British Isles goes from the west coast (from Esbjerg) for quick transport. Aarhus imports chiefly the coal, iron, and wood in which the peninsula is so deficient.

*The North Sea Coastal Plain.* This is a very important section of the great plain. It stretches westward from the mouth of the Elbe to Cape Griz-Nez beyond the delta of the Rhine. The country is lower and more marshy than that along the Baltic and except for the strip along the seashore is very like the central region of the plain. There is a belt of salt marshes along the coast behind an outer line of sand-dunes. Beyond that, inland, is the usual stretch of infertile sand alternating with marsh and occasional patches of better soil. Towards the uplands on the south the conditions of the plain

improve, and along the edge of the Rhine highlands where the coal-fields are exploited the population becomes dense, and industrial occupations take the place of agricultural and pastoral. Over the greater part of the rest of the region pasture predominates over plough land as the soil is often too damp for successful cultivation. The salt marshes near the coast form excellent pasture and many cattle and horses are kept on them. The sandy areas behind are less productive and the population diminishes from the coastal area inland, increasing again on the upland edge. The only towns of any importance are either along this edge where upland meets the plain, or on the coast.

*Inland Towns.* In the eastern part of the region the towns of the inner line are market and route centres of no great size, such as Minden (pop. 25,000) where the Weser breaks through a narrow ridge on to the plain (the Westphalian Gate), and Osnabrück (pop. 96,000) a little farther west. Then as the Rhine is approached comes the great block of towns making use of the coal-fields of the lower Rhine highlands (see p. 242). There are two sets of these towns, one on each side of the Rhine, the eastern set being the most important.

The position of these manufacturing towns is particularly favourable because the coal and iron are situated so close to a great navigable river that transport to and from the sea can be accomplished entirely by water and therefore cheaply. The centres have grown up along two lines running back from the Rhine (see Fig. 58), each line of towns specializing in one kind of manufacture and each having its great port on that river. The more northerly line runs along the plain close to the foot of the uplands and has Duisberg (pop. 273,000) for its Rhine port, at the mouth of the Ruhr. Its towns, of which Essen (pop. 470,000) and Dortmund (pop. 322,000) are the most important, are chiefly occupied with the manufacture of iron goods of many varieties. The second line of towns specializes in textile manufactures, the raw material for which comes up the Rhine from overseas to the port of Düsseldorf

(pop. 433,000). These towns lie along the valley of a small stream (the Wupper) that cuts its way through the northern slopes of the uplands just south of the Ruhr. Elberfeld (pop. 170,000) and Barmen (pop. 187,000) are the great manufacturing centres of this line, and between them they occupy six miles of the valley. The valley is narrow and steep,

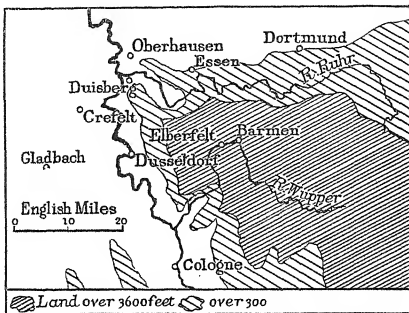


Fig. 58. Map showing the position of the chief towns of the Ruhr country.

so the buildings have to extend lengthwise from east to west. Cotton, wool, and silk are all manufactured here.

One other town on this reach of the Rhine which is less exclusively of modern industrial importance should be noticed. This is Cologne (pop. 700,000), the first large town on the Rhine after it has fully emerged from its gorge and is well into more open country. Cologne is in easy lowland connexion with all the great plain and with the North Sea coast, and also has control of the route to the south by the Rhine gorge. It has had a long history. In early days it was the head of all important traffic on the Rhine, as the gorge was difficult to navigate, and so was the collecting and distributing centre for a wide area. Its easy accessibility made it become a centre,

not only for trade, but for administration of all sorts, including ecclesiastical administration. This last led to the great cathedral being built there which was planned and begun in the prosperous days of the fifteenth century, when Cologne was one of the most important members of the Hanseatic League and had a London trading-house alongside our Guild Hall. Cologne is near enough to the coal-fields to have had a modern industrial development added to it, and it is a port for the manufactures of some of the towns on the coal area west of the Rhine.

The manufacture chiefly developed in this western area is that of iron goods, though wool, supplied chiefly by the sheep of the Rhine highlands, is also manufactured. Here again the old route-centres along the foot of the hills have become large industrial towns. Liège (pop. 170,000) and Aachen (pop. 156,000) are the two largest. Liège is especially important as it occupies the best position in the district. It lies at the point where the Meuse turns northward and begins to make its way across the plain to the Rhine delta, so the east-to-west route along the southern edge of the plain is crossed by a very important north-to-south one leading from the North Sea at the Rhine mouth, and eventually, after crossing the highlands, to the Mediterranean. Liège besides being an important route-centre was famed in old days for its metal-work, and it was the first place on the continent to open up its coal-fields and continue the old hand industry on modern lines by steam-power. Namur (pop. 32,000), which occupies the next best position where the Meuse emerges from its gorge through the Ardennes, is not nearly as large or important as Liège. It is not so near the coal-field and has not developed any extensive manufactures.

*Coast Towns.* The towns along the coast are not many but they are important, as they, with Hamburg (see p. 254), are the North Sea outlets for the whole of central Europe, which sends a large part of its products this way and also receives its commodities from overseas through the North Sea ports.



There are not, however, many suitable sites for ports along this coast, which is smooth and sandy. It is broken into by the deep inlet of the Zuyder Zee, which nearly divides the coastal plain into two parts, the country to the west and south of it being different from the rest of the plain, and this will be considered by itself. East of the Zee the plain is crossed by two rivers whose wide mouths made the development of ports easy. These are the Weser and the Ems. The Weser is the longer river, opening up communications right into central Germany, so that its port, Bremen, is much more important than that of the Ems, known as Emden. Bremen (pop. 295,000) does a great deal of import and export trade not only for the country to the south but also to the east, for communication with the middle Elbe is easy. Its chief imports come from the warm lands on the other side of the Atlantic and consist of tobacco, rice, and cotton. In this it contrasts with Hamburg whose trade is largely in food-stuffs and British coal, these two rival ports, so close to each other on the North Sea, having specialized in different kinds of commercial activity.

*Holland and Belgium.* On the other side of the Zuyder Zee the delta of the Rhine begins. The land here is lower than any other part of the low-lying plain and is only just saved from the clutches of the sea. Behind the sand-dunes the land for a distance of some 40 to 50 miles inland is below the level of the sea. South of the main stream of the Rhine this very low belt narrows down to a mere strip and the sandy area behind it widens out, till finally the alluvial lowland ends altogether against the chalk platform of Artois. This southern drier portion, drained by the Scheldt, is Belgium, and the region with the wide belt of damp land, the Rhine delta, is Holland.

*The Rhine Delta: Holland.* Though the delta country forms the chief part of Holland, the kingdom is not quite confined to it. A bit of the plain east of the Zuyder Zee, which is cut off from the German portion of the North Sea coast by the marshes of the Ems, is included in it. But this north-

eastern district of Holland is of little importance; it consists of poor pasture-land and is thinly inhabited.

The productive part of Holland lies in the south-west, in the low land of the delta which has in course of time been drained by the inhabitants. Some of this district is as much as 15 feet below sea-level and a great deal of it is 8 feet below. The coastal line of sand-dunes, which is broken in many places, formed a poor natural protection, so that it was only when dykes, or low walls, were built to keep out the sea that it was any use to drain the land. Towards the east, the land, though it rises above sea-level, is still low-lying and under 50 feet in elevation.

The effective drainage of the swamps began in the fifteenth century. It has been carried out by means of a series of canals which are at the same time most useful for communications. The water is pumped up into the canals, which have to be above the level of the marshes, by means usually of windmills, wind being the only natural source of power in this flat land. There is no water-power and no coal. Sometimes, however, the picturesque windmill of the earlier days is now replaced by a pumping-engine and its ugly engine-house to the detriment of the landscape. But the old mills fortunately remain in many parts. The reclaimed fields, known as 'polders', with their deep alluvial soil make rich meadows and are used mainly as pasture for cattle, though some parts are cultivated in a highly intensive manner, and the district supports a large population. The cultivation of the polders is largely in the form of horticulture and market-gardening, the growing of bulbs being an important industry. Haarlem (pop. 115,000) on the edge of the dunes is the chief centre of the bulb-growing. Wheat, sugar-beet, tobacco, and some flax are cultivated in this area. There is little industrial development in Holland but some textiles are manufactured in the south nearer the Belgian coal-fields. Tilburg (pop. 74,000) is the chief centre, manufacturing woollen goods.

A Dutch landscape in the polder district is very unusual in

character. It presents an absolutely flat stretch of country divided chess-board fashion into small fields by a raised network of canals, the boats on which are seen sailing above the level of the ground. This chequer of fields is intensely green, owing to the general dampness, and is dotted with black and white cattle—all Dutch cows are black and white. The frequent windmills and the infrequent houses that sometimes stand in the corner of the field on the edge of the canal are white, with red roofs, so the whole is bright and vivid in colouring. The houses are built long and low that they may present less surface to the constant strong winds that sweep unchecked across this flat unsheltered land. A few trees are usually planted round them to afford some protection, and these are the only trees in the region except for avenues of poplars sometimes planted along the roads.

*Dutch Towns.* The productiveness of the soil of the polders makes west Holland the most densely-peopled part of the central European plain outside the coal-field areas, but owing to the nature of the country there is a difficulty as to where this dense population shall live. The Rhine flowing over this very low land breaks up into a confusing maze of channels large and small, and important as the river is as a means of communication, there are very few towns upon it, as it is not easy to find sites dry and firm enough for settlements. The reclaimed land is too valuable to be given up to any extent for houses even if it were not so unsuitable in itself for villages. Along the edges of the polders at the foot of the sand-dunes on the west and on the higher ground above sea-level on the east, villages and towns could develop, but these would not suffice for those who work right out on the central parts, so the tops of the dykes that edge the canals have been used and the houses often stretch out in long lines beside the dyke roads, for these causeways also provide roadways. The canals themselves between the dykes offer a last possibility for habitation as well as communication, and a large population lives in the barges that are used so much for transport.

There are a number of towns along the line where the polders and dunes meet, getting their water-supply from springs that issue from the porous sands onto the alluvial clay. They are mostly small towns, becoming smaller towards the north. The Hague (pop. 425,000) is the largest, owing its predominance to the fact of the royal residence being established here. Originally Leyden (pop. 70,000) situated where an old arm of the Rhine, now nearly dried up, broke through the dunes and gave a sea outlet, was once more important, but has lost a lot of its old prosperity. The only large town on the eastern edge of the polders is Utrecht (pop. 152,000). It is exactly opposite Leyden, having been founded in Roman days on the same old arm of the Rhine, then used for navigation. But Utrecht lies also on a much used north-south route and hence has retained its importance. It is half-way between the main stream of the Rhine and the northern port of Amsterdam. This position made it suitable for a centre of canal and land routes and it is the chief market for the produce of the polders to the west of it.

The two other large towns in Holland are the ports. These have had to build on the marshes and contrive a firm foundation for themselves. Amsterdam (pop. 743,000) on the edge of the Zuyder Zee was built on piles driven into the mud at the opening of a fair-sized creek. Although so far north, its sheltered position and the seafaring ability of its citizens made Amsterdam a leading port of west Europe, especially in the seventeenth century after the establishment of the Dutch in the East Indies and the development of an eastern overseas trade of which this port was made the head-quarters. Later the entrance by the Zuyder Zee became too much silted up and shallow for large steamers, and Amsterdam only kept its position by means of a ship-canal across the marshes and dunes to the North Sea. This canal has enabled it to remain the largest port in point of population on the Rhine delta, and it has still almost a monopoly of Dutch colonial trade.

Rotterdam (pop. 578,000) on the Rhine itself has better

communications with the interior than Amsterdam and also better communications outwards as it stands opposite the mouth of the Thames, so that it has long rivalled Amsterdam and does an even larger trade. Both ports, like Hamburg and Bremen, are of more than local importance and do a large international trade, importing and exporting for central Europe, Rotterdam especially importing food-stuffs and coal in large quantities for central and south Germany and exporting manufactured goods from the Rhine coal-fields. The local exports of both consist largely of dairy produce from the polders.

Other much smaller river towns are Nimeguen and Arnhem, both at crossing-places where some higher ground comes close to the stream. They are ports and market centres.

*Scheldt Basin: Belgium.* To the south of the Rhine and its bordering marshes in the Belgian portion of the great European plain there is a return to the usual poor soil conditions. The fertile polder land is reduced to a narrow strip along the coast, and the rest is sandy with some bogs and marshes and a clay belt at the foot of the Ardennes upland.<sup>1</sup> Along the Ardennes edge on the inner border of the plain is the western end of the Rhine coal-field (part of which is included in Belgium), and there is also coal in the south-west under the younger rocks of the lowland. The industrial development of this coal belt has brought a large population to the country and has made it worth while to spend much time and energy in improving and cultivating the poorer soils, which are now made to produce an astonishing amount of food-stuffs. All kinds of cereals, vegetables and sugar-beet, and flax for the linen industry, are grown. This makes the population of the whole of Belgium, except the Ardennes heights, very dense—denser even than that of Holland where the greatest density amounts to over 900 persons per square

<sup>1</sup> It should be noted here that the greater part of the Ardennes, a description of which is given with the rest of the lower Rhine Highlands in an earlier section (p. 240), is included in Belgium.

mile. Parts of Belgium have over 1,000 to the square mile. Unlike Holland there is no great difficulty about sites for towns and villages, and the population is more evenly distributed than in the neighbouring country. The iron-manufacturing towns on the Ardennes border have been considered already<sup>1</sup> (p. 263). On the coal-fields of the south-west a great textile industry has been developed. Here there are a large number of manufacturing centres on a small area, because the modern frontier between France and Belgium has been drawn through the coal-producing belt, giving part to each country, and so a double set of towns has developed, one on each side of the boundary. The textile centres of Tournai and Coutraï, for instance, on the Belgian side, correspond to Roubaix and Tourcoing on the French side, and the iron-centre of Mons to that of Lille.

*Routes and Towns of Belgium.* The sea outlets of the Belgian plain are not very good. The coast is bordered by a smooth line of sand-dunes like that north of the Rhine. No rivers of any size flow out on the west; all the streams run northward to the Rhine delta and enter the sea together through one of the deltaic channels. For this reason the only outlet of real importance at the present day lies in the north of the country at the port of Antwerp. But in older days the undrained marshes round the Rhine channels made the approach to the river difficult, and as this portion of the European plain was always important commercially owing to its easy lines of communication southward by the Rhine and the Meuse to the Rhone and Mediterranean, ports had to be established on the west making the best of the poor entrance through the dunes and the small creeks. So we find the old town of Bruges on the edge of the polders on one of the creeks, a busy port in the thirteenth, fourteenth, and fifteenth centuries. It was built on canals partly made for drainage and partly for communications.

Bruges was always a manufacturing town as well as a port

<sup>1</sup> Notice that Liège is included in Belgium and Aachen and towns to the east in Germany.

and the chief European centre of cloth weaving. Flanders was the land where the art of weaving was earliest perfected, wool from the Ardennes being used at first, but afterwards that from England, which was easily imported from the eastern counties. Later on, with increased sailing facilities, wool came from Spain as well, and later still from countries far overseas. In course of time the creek on which Bruges is situated silted up and the town ceased to have any natural communication with the sea. A small canal was then made, but ships soon became too large for it and the town sank into decay while the northern ports took its place. However, since 1911 activity has begun to return to Bruges, for then a ship canal was made to it. It remains, however, a small town of about 53,000 inhabitants, and has not very much outgrown its old limits. The town, the mediaeval gateways of which are still standing, is much the same as old Bruges in appearance,<sup>1</sup> with the narrow cobbled streets but fine stone houses of the early Flemish merchants. Some of the streets are canals, with only a footway between the water and the houses, and crossed by many bridges.

Ghent, situated in the same region though farther inland, has the same character and history but has grown more in modern days. It takes a larger part in the industrial development of the present, being specially occupied with cotton and linen manufacture and has a population of 166,000.

The outport of Bruges is Zeebrugge; that of Ghent, Terneuzen. Ostend on the dunes about the centre of the coast is not important as a trading-port but is chiefly a packet-station. The importance of Antwerp on the Scheldt branch of the delta grew as that of Bruges declined, and the port received its great impetus, as did Amsterdam, with the opening up of trade with America and across the Atlantic generally. The interest of Belgium in the Congo region of Africa has caused rubber from the equatorial forest to be one of the chief articles of import at Antwerp. Raw materials for the textile industries,

<sup>1</sup> Bruges and Ghent both escaped the terrible destruction of the European war (1914-18) when so many towns of the region were bombarded.

wool, cotton, and flax are the other principal imports, and the manufactured articles from the coal-field area are chief amongst the exports. Like the other ports of the Rhine delta Antwerp (pop. 300,000) does a good deal of trade for the inland portions of central Europe, besides that for its immediate hinterland.

Belgium being poor in natural waterways has had to develop railways and canals for its transport. Both were easy to make in this level region in nearly any direction. Hence it was easy to establish a town in the centre of the country and bring rail and canal to it.

Brussels, the capital (pop., with suburbs, 826,000), deliberately fostered at the expense of Bruges and Liège in the fifteenth century, occupies a central position. It has been connected by canal with the manufacturing districts of the south, with Ostend, and with Antwerp. This last canal admits fairly large steamers, making Brussels a port which does some direct trading independently of Antwerp. It is a very large town, the centre of all the interests of the country, with various manufactures of which the most distinctive are lace and furniture.

#### NEW STATES AND BOUNDARIES OF CENTRAL EUROPE

The changes made in the political conditions of central Europe, by the war of 1914-19 were so extensive, especially in the eastern part, that it is important to consider their relationship to the regional geography in greater detail than has yet been done.

The two fundamental territorial changes were the break-up of the Austro-Hungarian Empire and the reconstitution of Poland as an independent state, the former independence of Poland having been suppressed at the end of the eighteenth century. These changes entailed an enormous number of readjustments of boundary.

*The Austro-Hungarian Empire* consisted, as has been shown already (see p. 193), of several different natural regions, each of which had once been independent but which gradually became amalgamated under the power of Austria growing out-



wards from the eastern Alps. The greater part of this expansion took place in the sixteenth and seventeenth centuries as a direct result of the invasion of the Hungarian plain by the Turks (see p. 215).

The regions within the empire in 1914 were: the eastern Alps, the northern Carpathians, the central Carpathians, the southern Carpathians, the Hungarian plain, and the Bohemian plateau with its Moravian border; but not content to stay within the limits of these regions Austria had pushed over the Carpathian ranges and gained control of a large part of the foreland (Galicia), formerly Polish. As a result of the war the three most important divisions—the Bohemian plateau, the middle Danubian plain, the eastern Alps—are separate once more but the boundaries are not the old historical ones, nor do they correspond with the natural limits of the regions. There is no Bohemian state corresponding to the old kingdom of Bohemia, but the plateau has been joined to the northern and central Carpathian regions to form the new republic of Chekho-Slovakia, thus uniting the peoples of two branches of the North Slavs, the Chekhs and Slovaks. The boundaries of the Slovakian area, however, run beyond the Carpathians on to the foreland on the one side and on to the middle Danubian plain on the other side, and so overlap two other natural regions. The position of the frontier line, therefore, has no geographical basis and its permanency is for that reason open to doubt.

The southern Carpathian region, Transylvania, having a majority of its population of Vlach origin, has been joined to Rumania, but the geographical communications of the two are not good. Transylvania is cut off from the Rumanian plain by the most rugged part of the mountains, the Transylvanian Alps (see p. 208), and movement is easier towards the Danube plain, the valleys opening this way being much wider and less steep. The geographical trend of the region is towards the west and not to the south.

The Hungarian state, though it contains the greater part of

the Danube plain, does not include it all. Not only are portions sliced off in the north and east in favour of Chekho-Slovakia and Rumania respectively, but another slice is cut off in the south to go with Yugo-Slavia, which is the new state in the north-western part of the Balkan peninsula. Thus Hungary is not a complete geographical unit.

Finally, the whole of the eastern Alpine region is not left to Austria. The southernmost valley, that of the Save and part of the Drave valley, are taken off to form part of the southern Slav state, and the whole of the Adige valley has been granted to Italy. This last district is one that has always been in dispute between Austria and Italy, its special importance lying in the fact that it is the line of route from the Brenner pass down to the Italian plain. The upper part has been Austrian since the fourteenth century, and being a section of the longitudinal valleys of the eastern Alps this is geographically justified. The middle part of the Adige valley, the Trentino, however, turns south and opens to the Italian plain, and this has been peopled by Italians and has its economic connexions with the plain and Venice, and was only seized definitely by Austria early in the nineteenth century. The return of this district to Italy will obviously improve the condition and the prosperity of the people, but to hand over also the German-speaking upper Adige district having trade relations with the northern side of the Brenner is a decision open to question and likely to cause economic distress and trouble. The boundary of Austria on the south now runs along the mountain range north of the Save, turns north near the Brenner, cuts across the pass and follows the ridge dividing the Adige from the Inn basin to the frontier of Switzerland. The boundary with Germany remains the same; that with Chekho-Slovakia follows the southern end of the Bohemian mountains and then crosses the Morava basin a short distance north-east of Vienna. The frontier then joins the Danube above Bratislava (Pressburg) and takes a sinuous course, following no important feature, across the western end of the upper Hungarian plain.

Austria is thus left without any sea outlet and is cut off from the coal-fields of the Bohemian and Carpathian country upon which her industry was based, and her economic position is therefore exceedingly difficult. The great town of Vienna which grew up as the centre of a large empire and of important international routes is far too large for this small and almost entirely mountainous state to support, while its industries suffer badly from the cutting off of their coal supplies. This condition of affairs does not seem therefore to promise much permanency.

*Poland.* The old Poland, dismembered in the late eighteenth century by Russia, Austria, and Prussia, occupied the country between the Pripet marshes and the valley of the Oder and between the Carpathians and the Baltic heights. The boundaries on the east and south were fairly well marked by physical features, the mountains and the marsh, but on the north and west they were rather indeterminate. The Baltic heights were easily crossed and have been crossed at various times in Polish history, and the better-drained region of the centre of Poland passes easily westwards to the lower moister lands of the middle Oder and Elbe basins. The boundary on this side has been difficult to settle in the past, and a portion of it, south-east of Breslau, was left at the peace settlement to be determined by vote. Farther north, a substantial portion of the former German Poland was given to the new independent state, which was also made to include most of the former Austrian portion to the south and the bulk of Russian Poland. In the north the frontier in general runs along the Baltic heights, but Polish aspirations towards the sea have been met by the possession of a belt of country running to the Baltic coast west of the lower Vistula and the Gulf of Danzig; but the port of Danzig (see p. 257), which in the past had belonged sometimes to her and sometimes to Germany, became a free city. The southern boundary is again the edge of the Carpathian region. On the east the limits are not yet determined, but must be somewhere in the district of the Pripet marshes.

*Lorraine.* In the west of Central Europe fewer changes were made, and these were only in the country between the Rhine rift and the Seine basin, much of which has been in dispute throughout many centuries of European history. The upland country lying between the Seine basin and the mountainous edge of the rift valley, the Meuse-Moselle uplands, or historically Lorraine, has its natural lines of communication to north and south and neither towards the Seine nor to the Middle Rhine (see p. 235). Hence it seems to form an intermediate belt between France and Germany and was inclined in earlier history to be rather independent, though nominally part of the German kingdom. It was obtained by France by force of arms in the late eighteenth century, but in 1870 Germany was able to gain back part of it, that is, the north-eastern part including the Saar coal-field (see p. 236). Most of this has been given again to France, which has now control of the coal-fields, but at the end of fifteen years the political control of the Saar basin is to be reconsidered.

*Alsace.* The other change in this area was concerned with the Rhine rift itself. The south-western part of the rift between the Rhine stream and the Vosges forms Alsace, a section of the fertile plain that extends on both sides of the river from Basel to Mainz (see p. 226). Alsace was conquered early in the seventeenth century by France, which then had access to it through the Belfort gap, though cut off from it by Lorraine and the high edge of the Vosges. It was retaken by Germany in 1870 and given again to France in 1919.

## VIII

### THE WESTERN LOWLAND: FRANCE

*Introduction.* France is a compact, roughly square-shaped country, in area nearly twice as large as the United Kingdom.<sup>1</sup> Except on the north-east it has well-defined boundaries, thanks

<sup>1</sup> U.K. area, 121,331 square miles; France, 212,895.

to its long sea-coast and the frontier ranges of the Pyrenees and Alps. It was one of the first countries of Europe to attain to a strong national unity, and this for various geographical reasons. First, the natural boundaries just referred to have been a great advantage and protection. Second, it possesses in the converging routes and rivers of the Paris Basin a natural inducement to and facility for unification, and this is not discounted by any serious barriers to free communication. France should in this respect be contrasted with Italy and the Balkans, where natural configuration has militated so successfully against national unity. A third reason for France's early consolidation lies in the fact that its diversity of soil and climate is such as to yield a great variety of products whose interchange has made for solidarity of relationship between the different regions.

The world position of France is very advantageous for trade. It is in some respects even more central than Great Britain, for besides having free access to the shallow seas of western Europe and to the New World, it has a Mediterranean seaboard where it can collect southern and eastern trade, and besides this it has command of important overland routes into Italy and Central Europe.

*Structure and Relief.* A short sketch of the structural history of France is essential to an understanding of its relief and soil. Two great earth-movements have been in the main responsible for the present configuration. At the end of the Primary Period foldings and crumplings of the earth's crust formed a belt of high mountains across Europe, running in a south-east to north-west direction, stretching from Bohemia to the Atlantic Coast. Long ages of erosion and denudation reduced these mountains to an undulating lowland (peneplain), unimpressive as to scenery, but with an immensely hard and stable foundation of old rock. Again long ages passed during which this old lowland was frequently submerged and thickly covered with sedimentary rocks. Then came the great Tertiary earth-movements which folded the Mediterranean

shores into high ridges abutting against the old resistant low-land to the north. This was upheaved and fractured, parts being elevated and forming plateaus such as the Harz Mountains, the Westerwald, the Ardennes, the Black Forest,

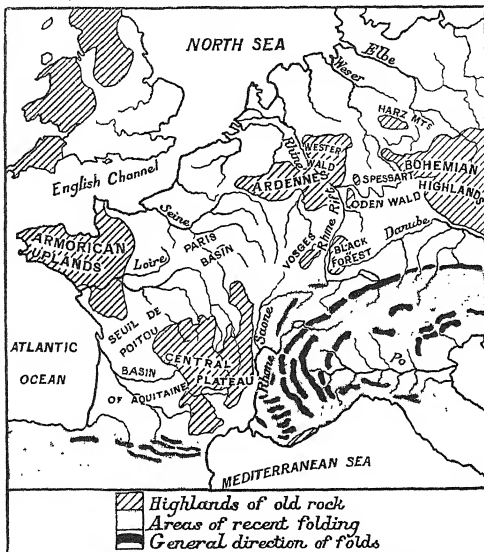


Fig. 59. Structure of the highlands of Western Europe.

the Vosges, the Central Plateau of France and Armorica, while parts subsided, making rift-valleys like the Rhine Rift, or basins like the Paris Basin. The elevated blocks were at first covered with soft sedimentary rocks, but these were quickly washed away, exposing the old hard foundation of granite and

gneiss. In the basins erosion was less violent. The softer rocks were not so quickly washed away, and so still persist.

France, then, consists of two more or less elevated regions of old rock, the Central Plateau and Armorica, and the large surrounding lowlands of the Seine, Loire, and Garonne, covered thickly with limestone, chalk, and sand deposits. The Rhone valley is partly due to a down-fold, and partly to fracturing (cf. English River Eden).

The old uplands are nowhere very high. The Armorican hills are from 600 to 1,000 feet. Most of the Central Plateau is between 1,500 and 3,000 feet, while the higher parts rise in places to 6,000 feet.

The lowlands are drained by four large river-systems, the Seine, the Loire, the Garonne, and the Saône-Rhone. Of these only the Seine and its tributaries are easily navigable without costly regulation and canalization, for the Garonne and Loire suffer from seasonal variations in volume and serious floods, while the Rhone, although used to a certain extent for barge traffic, is too swift to be an important water-way, until it is regulated as is intended.

In spite of this the French rivers are a great national asset, for, as has been said, their normal converging arrangement, so different from the elbow turns and divergent courses of the mountainous Balkans, makes their valleys convenient routes for roads and railways.

*Climate.* In seasonal distribution and in general arrangement the temperature and rainfall of France resemble that of Great Britain. Thus in winter the isotherms tend to run from north to south, because, as in Britain, the mild westerly winds are the predominating influence at that season, making the west side warmer than the east; and there is no month with an average temperature as low as 32°. In summer the strength of the sun's heat is the main factor, and as this diminishes from south to north, the isotherms run east and west. Thus French summers are markedly warmer than those of Britain, and the whole country, except the northern

coastal belt, produces vines, while on the Mediterranean coast olives ripen.

The rainfall resembles in quantity and distribution that of Britain, being heavier on the west and north-west coast and on the Central Plateau, and lighter on the lowlands. It is no-

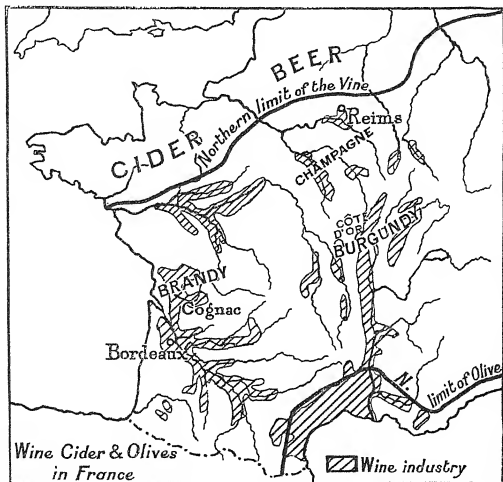


Fig. 60. Distribution of wine, cider, and olive production in France.

where as heavy as in western Scotland or Wales, because the highest uplands do not lie in the west as in Britain.

*Forests.* Like the United Kingdom, France was once densely forested, but deforestation has gone so far that many of the poorer uplands have been hopelessly ruined; for wholesale stripping has left the land so unprotected that the thin soil gets washed away, leaving bare rock, and reafforestation is



difficult since the bitter upland winds destroy young trees which have no bigger ones to protect them.

*Occupation.* France is far more predominantly agricultural than Britain, partly because her coal-fields are less extensive, but chiefly because her soil and climate produce such a great variety of remunerative crops. Broadly speaking the two old land-masses of Armorica and the Central Plateau are used for

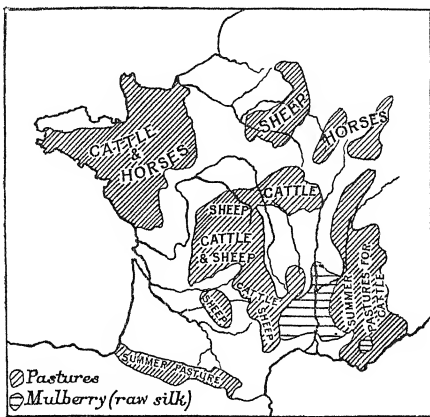


Fig. 61. Distribution of pasture and of mulberry trees.

all kinds of stock raising, while the surrounding lowlands are devoted to a rather intensive kind of mixed farming, with corn as the chief basis. All the main river-valleys are devoted to vine growing, more especially those of the River Loire, the Garonne, and the west side of the Rhone valley.

Manufactures are of ever-increasing importance in France. The two chief coal areas are the Franco-Belgian fields in the north, and the numerous smaller deposits scattered round the

edge of the Central Plateau. The presence or accessibility of raw materials has decreed that in the north linens, cottons, woollens, and iron goods should be the chief manufactures, in the south iron goods and silk.

*Population.* The distribution of population in France is much more even than in England, as would be expected in an agricultural country (cf. Ireland). The chief areas of concentrated population are (a) the vine-growing river-valleys, (b) the environs of Paris (c) the Franco-Belgian coal area, (d) the Mediterranean coast.

Although France is nearly twice the size of the United Kingdom, its population is far less.<sup>1</sup> This is due partly to the fact that agriculture is the main industry, and partly to the very low birth-rate. At the present date the population of France is stationary, while that of Great Britain shows a very large annual increase.

#### NATURAL REGIONS OF FRANCE

As has just been said, France consists of two uplands of old rock, and the large surrounding lowlands of younger deposits drained by broad river-systems. Thus we can distinguish the following natural regions :—

- (1) The Central Plateau.
- (2) The Rhone-Saône Valley.
- (3) The Mediterranean Region.
- (4) Corsica.
- (5) The Plain of Aquitaine.
- (6) The Paris Basin.
- (7) The Armorican Peninsulas.

#### THE CENTRAL PLATEAU

*Introduction.* Just as the Rhodope Plateau is the core or nucleus of the Balkan Peninsula, so the Central Plateau is the core of France. From it radiate the greater number of the

<sup>1</sup> U.K. 1921, 44 million; France 1921, 39 million.

chief routes. It is a region that produces strong and vigorous types of human and animal life, and sends them out on to the richer but more enervating plains where the men have wider

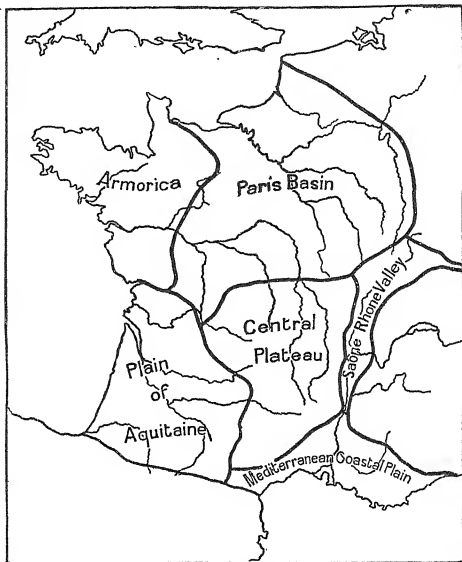


Fig. 62. Natural Regions of France.

opportunities of earning a livelihood, and where the animals are needed for food and for labour.

The Central Plateau, like all old land masses, has thus been a centre of repulsion in times of prosperity, and a retreat in times of war. But since the rise of industrialism things have

changed. As in the Pennines, pockets of coal occur all round the edge of the upland, and it is now surrounded by a belt of dense population.

*General Character.* Like the other old mountains of Europe, the Central Plateau is composed mainly of granite and gneiss. It is overlaid with stretches of recent volcanic deposits, and lapped about by a belt of secondary limestone which at one time covered its whole surface to a great depth. Before the earth movements which folded the Alps this region was part of an extensive lowland or peneplain. The Alpine movements upheaved it in a squarish block, giving it a tilt down to the west and fracturing it so that pieces subsided and formed rift-valleys such as those now occupied by the Loire and Allier. The upheaval caused vigorous erosion to begin,<sup>1</sup> and the sheet of limestone was rapidly washed away from the main part of the plateau, leaving exposed the foundation of old rock in the depressions of which were large coal-deposits. Further water action cut deep gorges, like the Scottish glens, in the hard rock.

The effect of all this has been to produce a highland with a general elevation of 1,500–3,000 feet, surmounted in the central part by volcanic masses whose peaks rise to 6,000 feet. Its eastern edge falls precipitously to the Rhone valley, but the descent into Aquitaine is very gradual.

Since the old rock is impervious to water, and the rain and snowfall is heavy, an enormous number of surface streams run off from the plateau on to the surrounding lowlands. Thus the Garonne and the Loire get the greater part of their water from here. The streams are swift and irregular in volume. They become rushing torrents when the snow on the uplands melts, and also during the autumnal storms (cf. Fig. 71, p. 309). Some of the valleys are followed by railways, e. g. the Loire, Allier, Cher, Dordogne, but many are too steep and narrow. None of the streams is practicable for navigation.

<sup>1</sup> Because the higher the land the swifter its rivers, the fiercer its frosts, the stronger its winds, and the heavier its rains.

*Climate.* The climate of the Central Plateau, except on the south-east slopes facing the Mediterranean, is severe and inclement, and the seasonal range of temperature is very great. The winter is long and snowy, with bitter winds and 90 to 100 days of frost. Spring is short and cold, summer extremely hot. The autumn, however, is a friendly season, long and sunny, and hence fruits ripen well and vineyards flourish on sheltered slopes.

TEMPERATURE (degrees Fahr.).

Altitude.	Winter.			Spring.			Summer.			Autumn.		
	D.	J.	F.	M.	A.	M.	J.	J <sup>y</sup> .	A.	S.	O.	N. Ann.
Puy de Dôme. 1470 ft.	29	28	29	30	35	41	48	52	52	48	40	34 39

The heavy rainfall of 40–60 inches occurs mainly in spring and autumn, while in winter some parts have snow deep enough to interrupt communications. The snow often lies till May.

*Vegetation.* In former times the whole plateau was forested, except for the highest summits, which were turf-covered. Ruthless deforestation has stripped the region, and to-day the higher parts are pasture or barren heath, the valleys and depressions cultivated fields.

*Sub-Regions.* In economic detail the various parts of the Central Plateau differ widely, and it will be clearer to treat separately (a) the Eastern Border, (b) the Central Volcanic Area, (c) the Western Table-land, (d) the Limestone *Causses*.

(a) *The Eastern Border* is the part most elevated and most shattered by the Alpine disturbances. It consists of a series of block mountains<sup>1</sup> of granite, gneiss, and schist. These are low rounded hills separated by narrow depressions in some of which lie rich coal-fields. These depressions or gaps are used by railways joining the Loire basin to the Rhone. The hills, which have separate local names—Morvan, Charolais, Beaujolais, Lyonnais, Vivarais, &c.—are used in the north for cattle and in the drier south for sheep. On the lower slopes

<sup>1</sup> See pp. 153–5 and 276–7.

corn and the vine flourish, but from Lyon southwards the mulberry-tree and silk-worm culture predominate over everything else. The silk is woven at Lyon (p. 296) and the surrounding towns. The commonest forest tree of the district being the sweet chestnut, chestnuts are a staple food of the peasants as well as an article of trade.

The coal-basins above referred to are as follows: (see Fig. 63).

(1) The Creusot basin, used almost entirely for iron-manufacture, nails, machine parts, guns and so forth. Le Creusot is the chief town of this field, but as it owes its importance solely to a very large iron factory it is not a big place.

(2) The St. Etienne basin, which besides large ironworks has equally important silk manufactures. St. Etienne (pop. 193,000) is the great centre. It supplies nearly all the small-arms for the French army, and has notable silk-ribbon factories. The town stands on a small tributary of the Rhone, and as the little valley makes a way up on to the plateau, St. Etienne commands one of the important routes from the Rhone to Bordeaux and Paris.

(3) The Alais basin, which is a smaller and less important field, has iron, lead, and zinc as well as coal. Here again iron foundries and silk factories are numerous.

(b) *The Central Volcanic Area* is a very varied one and includes numerous minor sub-regions. Between the large rift valleys of the Upper Loire and the Allier are a number of granite ridges running from north to south.<sup>1</sup> Their height, over 3,000 feet, and their infertile soil render them unsuitable for cultivation. In the north they are wooded, further south drier and even more barren. They support a scanty population of shepherds and charcoal-burners, and small timber industries abound.

The basins of the Upper Loire and Allier are a striking contrast to the granitic ridges which separate them. Warm,

<sup>1</sup> Mountains of Forez, Margeride, Lozère, &c.

sheltered, and covered with rich volcanic soil washed down from the Auvergne Mountains, they produce quantities of corn, sugar-beet, and fruit, and are densely peopled. There

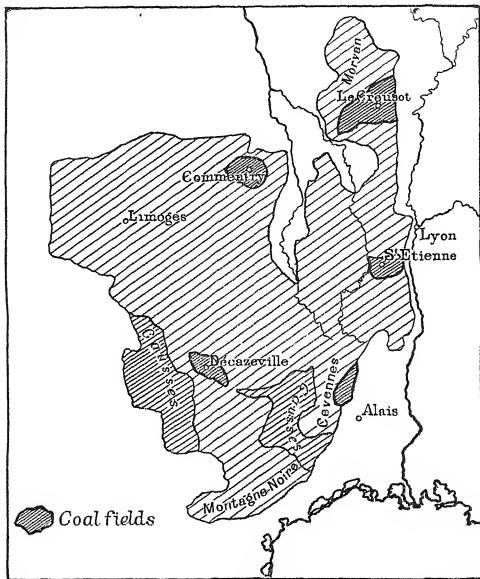


Fig. 63. The chief coal-basins of the Central Plateau.

are many important industries here, such as lace-making, and also jam-making and fruit-drying, resulting from the fruit-culture.

As in most rich agricultural regions, towns are small but

numerous, many markets and industrial centres being needed, e. g. Roanne, Moulins, Le Puy. In the narrow upper valleys the towns and villages stand on the river, but lower down they stand away from the actual banks because of the heavy floods. The larger settlements are, of course, situated where fords and bridges have been possible, or where rapids have in bygone days given rise to mills. Roanne and Moulins are bridge-towns, and the latter owes its name to the numerous little mills near it.

Besides the granitic ridges and alluvial basins of the central area of the highland, there are the mountains and uplands of recent volcanic rock, of which the Auvergne Mountains are the chief. Here are the famous *Puys*, denuded remnants of enormous volcanoes which rise to a height of some 6,000 feet. The Puy de Dôme, Puy de Sancy, and Mont Dore are among the best known.

In this district the rich soil makes very fine summer pasture and the oxen of Auvergne are famous. The large stock-farms here are in two parts, a valley-holding for the beasts in the winter, and a mountain-holding used from May to October. Water is abundant and well distributed, and hence the large population is able to live in small and scattered villages or homesteads.<sup>1</sup> Towns do not develop much, for communications are very difficult, and rivers quite unnavigable. Clermont-Ferrand (pop. 111,000) is, however, a good-sized town. It stands on the edge of the upland overlooking the Allier at the junction of the route of the Allier depression and another route which crosses the plateau to the Garonne basin. Hence it is the market centre for Auvergne, and an enormous india-rubber industry which has grown up in it adds to its importance.

(c) *The Western Sub-Division* of the Massif Central, the Plateau of Limousin, is an undulating table-land sloping gently to the Atlantic, and drained by numerous large tributaries of

<sup>1</sup> The distribution of population resembles that of the richer parts of Cornwall, for the same reasons.



the Garonne and the Loire. The soil of granite and old volcanic rock<sup>1</sup> is poor, and great tracts are covered with heather, sweet chestnut woods, and poor pasture where a few sheep subsist. In sheltered hollows the climate is milder and the soil better, and here are good pastures for fattening cattle. Limousin is one of the districts most famous for forests of the sweet chestnut. This tree flourishes on infertile uplands when not too cold, and where it is plentiful it forms an important article of food and trade. The nuts are ground into flour and used as a substitute for corn.

The population is scanty, and the towns are small local markets, but three good-sized settlements exist. Aubusson in ancient times made rich carpets from the wool of its sheep, and the industry survives. Montluçon is close to the coal-field of Commeny and so has large ironworks. Limoges (pop. 98,000) is the greatest centre of the region. It stands on the River Vienne, near its source and at the junction of the main line from Paris to Bordeaux with the cross-line from Lyon to Bordeaux. Hence it is a centre of the cattle trade and has all the resulting leather industries. Besides this, the kaolin<sup>2</sup> found close by has given rise to the famous porcelain factories.

(d) *The Causses* are the wide expanses of limestone flanking the plateau on the south and south-west (see Fig. 63, p. 286). They are remnants of the great sheet of Jurassic limestone which was deposited all over the Central Plateau when it was submerged in the Secondary Epoch, and are similar to the Cotswold rocks. These flat uplands are very permeable and also soluble by the weak acids contained in running water. Hence they are full of swallet-holes (locally *avens*) into which the surface streams disappear and pursue their way underground. The soil is consequently very dry, and covered with short, hard turf. Great herds of sheep come up from the surrounding valleys and lowlands during the hot

<sup>1</sup> Which is not fertile like recent volcanic deposits.

<sup>2</sup> Clay formed from the disintegration of granite.

southern summers. The Tarn and Lot and other good-sized rivers have cut deep precipitous valleys<sup>1</sup> whose alluvial soil mixed with fertilizing lime produces fine crops of corn, vegetables, and fruit.

The two industries of the *causses* are both outcomes of the sheep-farming—wool-weaving and cheese-making. Roquefort cheese is made of a mixture of ewes' and goats' milk, and the industry is carried on in large cool caves in the limestone.

The *causses* are so bleak, windy, and barren as to be thinly peopled, and the few great highways which run across them are bordered by scarcely a village. Any small settlements that exist on the uplands lie huddled in out-of-the-way hollows

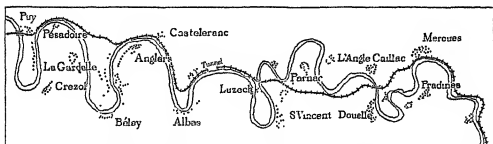


Fig. 64. Fifteen miles of the R. Lot, showing its densely populated valley winding through the *causses*. Note the railway cutting across the necks of the meanders.

where water and a little shelter can be obtained. The valleys are, as a result, over-populated. The Upper Lot and Tarn flow in close small meanders, and in some parts every bend of the stream has a good-sized village. Roads and railways follow the valleys, but the latter have frequently to cut across the necks of the meanders for the sake of directness (Fig. 64).

The towns in this region are little market centres of ten or twelve thousand people—e. g. Cahors, Mende, Rodez.

## The Saône-Rhone Valley

*General Character.* The long narrow depression separating the Central Plateau from the Alps, graphically termed a *coulloir*

<sup>1</sup> The term *Causse*, like the English term 'Down', means locally the upland only, and does not include the valleys.

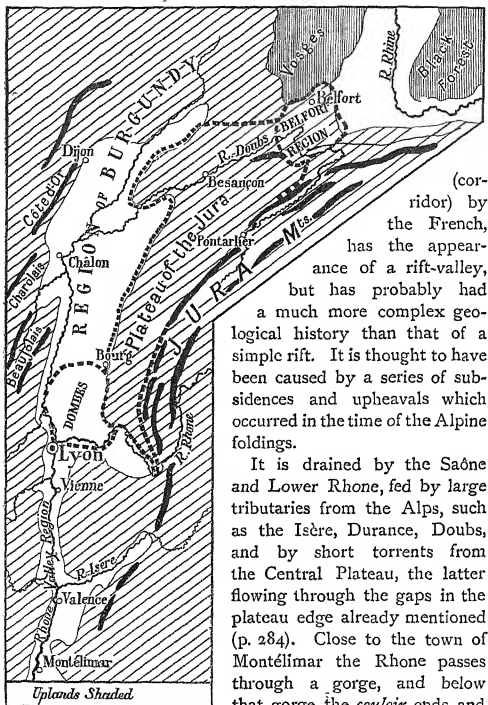


Fig. 65. Diagram showing natural sub-regions of the Saône-Rhône valley.

(corridor) by the French, has the appearance of a rift-valley, but has probably had a much more complex geological history than that of a simple rift. It is thought to have been caused by a series of subsidences and upheavals which occurred in the time of the Alpine foldings.

It is drained by the Saône and Lower Rhone, fed by large tributaries from the Alps, such as the Isère, Durance, Doubs, and by short torrents from the Central Plateau, the latter flowing through the gaps in the plateau edge already mentioned (p. 284). Close to the town of Montélimar the Rhone passes through a gorge, and below that gorge the *coulis* ends and the Mediterranean lowland opens out.

The Saône rises in Lorraine at a height of only about 1,000 feet; hence it has a very sluggish current, and is

navigable for a great part of its course. Another result of its slow movement is that it freezes readily, and navigation is interrupted every year for a fortnight or so by ice. It has two heavy floods a year, a winter one which is useful as a fertilizing agent, and a summer one which is very harmful, spoiling the grass or carrying away the uncared hay.

The Rhone rises at a great height, in a glacier near St. Gotthard,<sup>1</sup> and after a devious course turns sharply to the south at the Saône confluence. Getting most of its water from the Alps, it is much affected by melting snows, and the resulting irregularity of volume, combined with a strong current, renders it of relatively little use for navigation. It carries less than a million tons of merchandize per annum, of which slightly more than half goes down stream.

*Climate.* The climate of the Rhone valley is continental rather than maritime, for it is cut off from the moderating Atlantic winds by the Central Plateau. It is, of course, far colder in the north than in the south, but everywhere the winter is frosty, the summer intensely hot. Hence one does not find delicate trees like the olive except toward the southern end; but the vine, which is cut back to a mere stump after the harvest, survives the cold and flourishes exceedingly in the long sunny summer and autumn, while maize is another standard crop (see Fig. 4, p. 9).

TEMPERATURE (Degrees Fahr.).													
	<i>Winter.</i>			<i>Spring.</i>			<i>Summer.</i>			<i>Autumn.</i>			<i>Annual.</i>
	D.	J.	F.	M.	A.	M.	J.	J.	A.	S.	O.	N.	
Lyon.	35	34	38	43	51	57	64	68	67	61	52	42	51

, RAINFALL (inches).													
LYON.	1.96	1.36	1.44	2.16	2.68	3.32	3.40	3.48	3.32	3.00	3.84	2.60	32.56

*Sub-regions.* The Rhone-Saône valley is a geographical

<sup>1</sup> See p. 196.

unit only because it is a continuous highway. The aspect of the country, its products and human occupations, differ widely in different parts. For the sake of clearness the natural subdivisions may be enumerated as follows: (*a*) the Belfort district, (*b*) the Jura plateau, (*c*) Burgundy, (*d*) Dombes, (*e*) the Rhone valley (see Fig. 65).

(*a*) *The Belfort District*, known also from its historical associations as the Burgundian Gate, is the famous passage from Southern France to the Rhine in between the Vosges and the Jura, and is guarded by the strong fortress of Belfort. The gap is a densely-peopled industrial area where cotton and metal goods are made.

(*b*) *The Plateau of the Jura* is a limestone upland making a kind of foreland to the Jura Mountains. It is a rather poor country, where a scanty population ekes out a living by farming. Water being scarce, compact villages of limestone cottages stand on the lower slopes of the hills where springs emerge from under the limestone. Little market towns collect the corn from the farms, and it is ground in water-mills on the Saône.

The plateau is drained by the Doubs, and Besançon (pop. 58,000), situated on the river, is a bridge-town and guards an important route through the Jura Mountains.

(*c*) *Burgundy*, the famous wine district, lies between the Jura plateau and the hills of the Côte d'Or and Charolais, and is drained by the Lower Saône and its tributaries. Here a layer of fertile tertiary deposits covers the limestone, and yet the water from the surrounding uplands brings down plenty of dissolved lime to ameliorate the soil. Hence a very fertile and prosperous farming region, where sugar-beet, vegetables, and maize are grown. Here, as on the plain of Lombardy (p. 160), the maize gives rise to a notable poultry-farming industry.

Looking across the fruitful plain westward one sees the Côte d'Or and then the broken edge of the Central Plateau rising like a dark wall, its lower slopes covered with the

sombre foliage of the vineyards, and its heights clothed with forest.

The Côte d'Or is a limestone escarpment rather higher than the Cotswolds or Mendip, but instead of their barren and beautiful cliffs it has terraced vineyards almost to the top. Along the base of the escarpment, where the water issues from under the limestone, is a continuous line of prosperous villages in which the vine-growers live (Fig. 66).

(d) *Dombes*. Travelling south from the smiling plains of Burgundy one enters suddenly the curious little region of Dombes, tucked in between the Saône and Rhone where they begin to converge. Here a subsoil of impervious clay, covered with gravel and boulders left by a retreating Alpine glacier, has made a very infertile marshy tract covered with myriad ponds and interspersed with barren moorland. The villagers, a poor and unhealthy people owing to the fever-breeding marshes, make a scanty living by fishing in the ponds, and weaving silk on hand-loom for the silk-firms at Lyon close by.

(e) *The Rhone Valley*. Below Lyon the Rhone valley proper begins, and now the *couloir* narrows and becomes more than ever a passage, with an occasional widening into a fertile little basin. Here is the mulberry region, and the raw silk industry has given rise to weaving in and about Lyon, all the more because the land round that town is infertile and stony.

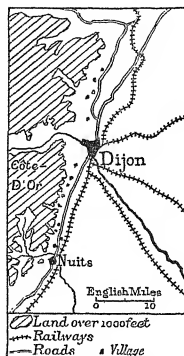


Fig. 66. Limestone escarpment of the Côte d'Or. Note the row of villages at the mouths of the combes, the large town in the gap, and the road and railway running along the foot of the escarpment. Cf. the Mendip or the Cotswold limestone escarpments. See Fig. 67.

At first the peasantry supplemented their agricultural earnings by home weaving, but later this gave way to the modern factory system.

The towns south of Lyon, such as Vienne, Valence, Montélimar, stand each on one of the little basins above mentioned, and are very old industrial and market centres. But their manufactures are small, partly because the enormous town centres to the north and south of them absorb their vitality.

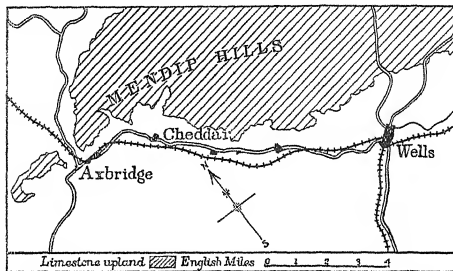


Fig. 67. The limestone escarpment of Mendip. Cf. Fig. 66.

*Towns and Routes of the Saône-Rhône Valley.* The routes of the whole Saône-Rhône region are best considered in connexion with the great towns on which they converge.

Dijon (pop. 83,000) stands exactly at the mouth of a gap in the limestone escarpment of the Côte d'Or, and is opposite the Burgundian Gate into Central Europe and the Pontarlier defile into Switzerland (see p. 203). The Burgundy Canal, which links up the Seine Basin with the Saône, comes through the limestone gap aforesaid. The railway from Paris follows up the Yonne Valley, leaves it and cuts through the upland behind Dijon by a tunnel, and from Dijon branches into four main lines: (a) up the valley of the Doubs by Besançon to Mulhouse, a route all the more important because it is followed

by the canal joining the Rhone with the Rhine, (b) through the Pontarlier gap to Switzerland and Italy, (c) by Mâcon and Bourg to Geneva and the Simplon Pass and also to the Mont Cenis tunnel and Turin, (d) down the Rhone to the Mediterranean. As the town stands at the gate between the north

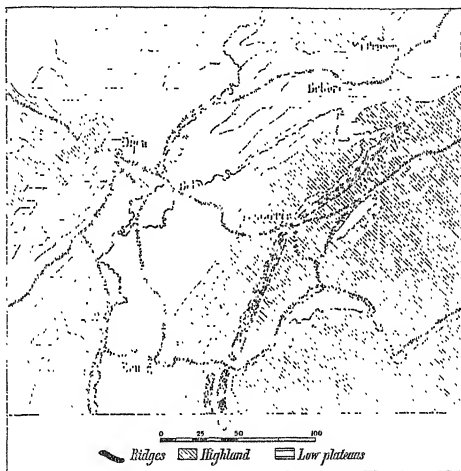


Fig. 68. Position of Dijon, and routes from southern France into Germany and Switzerland.

and south, it readily gets the natural products of both, and so has become a great centre for the manufacture of food-stuffs.

*Châlon-sur-Saône* is a small town, but noteworthy as commanding the gap by which the Canal du Centre gets through the uplands and so connects the waters of the Loire with the Saône-Rhone.



*Lyon* (pop. 570,000) is the third town in France. It is a more important route centre than it appears at first sight, for here the swift upper Rhone and the sluggish Saône merge and form a stream whose water traffic is different from either. Hence a great deal of unloading and reloading of merchandize has to take place at Lyon. Besides that it commands the Mont Cenis route to Turin, and the line which skirts round the north edge of the Central Plateau to Bordeaux. It is also an important bridge-town, and from it railway lines run down both sides of the Rhone. It was the capital of Roman Gaul, and later the centre of Western Catholicism, and has always been a strong fortress, as well as a famous silk-weaving centre.

### The Mediterranean Region

*General Character.* This region includes the coastal lowlands of Provence and most of Languedoc. In soil and relief it is somewhat varied, and its geographical unity is the result of climate only. As a rule climate, although one of the strongest factors of geographical control, is not sufficient by itself to mark off a natural region. But the Mediterranean climate is such a well-defined type and produces such characteristic vegetation and modes of human life, that it always gives a marked individuality to a region where it prevails. This is the more striking in France, because only one small part of the country belongs to this type.

The configuration of the region is simple, consisting of a more or less triangular lowland walled in by hills and drained by short rivers tributary to the Rhone.

*Rivers.* Except for the Rhone, all the rivers are short, swift, and extremely irregular in volume. Their floods are due partly to melting snows from the mountains, partly to the torrential nature of the rainfall, and partly to extensive deforestation.<sup>1</sup> In Languedoc these floods cause great damage to the vineyards. Such rivers are useless for

<sup>1</sup> Forests in a river basin, by intercepting the rain, make the run-off after a storm much more gradual.

navigation, but most valuable for irrigation in this dry country.

The Rhone, after passing through the gorge near Montélimar, flows over flat country and attains a considerable width; but it is still very rapid owing to the great impetus it receives from its steep upper course. It has built out a large delta, known locally as the *Camargue*. The Mediterranean having but slight tides, and the Gulf of Lions being somewhat protected from currents, the masses of débris brought down by the Rhone and its tributaries are not swept away, and so the delta and the alluvial coastal plain on each side of it increases with great rapidity.

The various tributaries of the Rhone flood at different seasons, not simultaneously; hence the Rhone itself, unlike most of the French rivers, has a relatively constant volume. But, as has been said, it is too swift for easy navigation, and until the much desired canal from Lyon to Marseille is made, the excellent water-way of the Saône must remain a blind alley for trade.

*Climate.* It is not necessary here to repeat what has been said elsewhere (p. 60) about the Mediterranean climate. Suffice that the south of France is the warmest and driest part of the country. It has, however, two or three weeks of frosty weather annually, and its total annual rainfall would appear to be fairly adequate but for the uneven distribution. Nearly all the rain falls in torrential storms in the late autumn, so that nothing mitigates the burning drought of summer. The country suffers from a fierce north wind in winter, known as the *mistral*. This is due to an area of persistent low pressure over the warm Mediterranean in winter, which draws the wind down the Rhone-Saône 'corridor' toward it.

TEMPERATURE (Degrees Fahr.)

	<i>Winter.</i>			* <i>Spring.</i>			<i>Summer.</i>			<i>Autumn.</i>			<i>Annual.</i>
	D.	J.	F.	M.	A.	M.	J.	J.	A.	S.	O.	N.	
Marseille	44	43	45	49	55	61	68	72	71	66	58	50	57

RAINFALL (inches).

Marseille	2.12	1.80	1.32	1.64	1.96	1.72	1.16	0.64	1.08	2.08	3.56	2.84	21.92
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*Vegetation.* The usual Mediterranean vegetation prevails. There are no large, dense forests, but clumps of trees such as eucalyptus, cork-oak, and cypress are interspersed with tracts of short, dry grass. The cultivated plants are, of course, the olive, vine, mulberry, and citrus. Cultivation is nowhere possible without methodical irrigation, but all the better parts are thoroughly irrigated.

*Sub-regions.* Two distinct types of country are included in the Mediterranean region of France—(a) the triangular lowland of the Rhone mouth, most of which is Languedoc, and (b) the Côte d'Azur or French Riviera.

*The Rhone Lowland* is bounded on the east and on the west by limestone hills, the foothills of the Alps, and the Central Plateau respectively. These are dry and stony, and can be used only for sheep rearing.

The plain itself, composed of alluvium well impregnated with lime washed down from the hills, is very fertile, but marshy in parts. The western part, the Plain of Languedoc, has unfortunately only one important industry, a vast and intensive vine-culture. The vineyards, irrigated of course, are rich and productive to a degree, and the people have periods of great prosperity. But when disease attacks the vines the loss and misery are appalling, and in good years, when the whole Mediterranean grape-harvest is heavy, the market is glutted and regions like Languedoc suffer severely.

The eastern part of the plain has a much more varied economic development. Round about Avignon the land has been so carefully cultivated and irrigated that it is like one large garden of early vegetables, and the slopes are covered with olives and mulberries. Here a dense population lives in much prosperity. Nearer the coast the soil is much less fertile, partly because of extensive salt marshes. A great deal has been reclaimed and used for market-gardening, but much of it is still natural grass used for winter pasture for sheep from the Alps.

*Towns.* The distribution of settlement is interesting and

characteristic. On the marshy lowlands the villages are arranged as in the English fens, concentrated on any slight elevation that offers itself, while in the river-valleys they stand on the natural river-terraces<sup>1</sup> to avoid floods. But the largest settlements are in a line along the lower slopes of the limestone-hills, chiefly because here the water issues from under the limestone, but also because this line is the natural meeting-place of the produce of the uplands, wool and sheep, and that of the lowlands (cf. Côte d'Or, p. 293). Montpellier and Nîmes, both old but growing towns of 80,000 people, are the largest settlements on this town line. They stand on the high road and railway which lead up the Rhone valley. Montpellier was a port in the Middle Ages, but the Rhone silt has spread out in front of it so rapidly that it is now well inland. It was an old centre of learning, and still has a large university, in whose famous botanical research department agricultural botany is studied, greatly to the advantage of the surrounding country. It is now a great centre of the wine-industry. Nîmes was an important Roman town and has wonderful Roman remains. To-day it manufactures extensively the local raw materials, making silk, carpets, boots, wine, and brandy.

Carcassonne is small, but interesting as the gap-town commanding the passage into Gascony followed by the Canal du Midi and by a railway. The canal is so small that its trade is of little importance.

*Ports.* Marseille overshadows all the other harbours of the south coast, but Cette is a busy little outlet for the wine of Languedoc, and Toulon (pop. 115,000) owes to its fine harbour its importance as the French naval base of the Mediterranean.

Marseille (pop. 652,000) stands nearly thirty miles east of the Rhone mouth, in a depression sheltered by white limestone cliffs. The Mediterranean current here runs from east to west, and so the masses of Rhone silt are carried away

<sup>1</sup> Remnants of higher ground along river banks, which have escaped erosion.

from the harbour, not toward it as in the case of Montpellier. Marseille is the second town of France, her greatest port, and ranks as the seventh port of the world. Its natural advantages are so great and so obvious that from earliest times it has been an important trade centre. The Rhone depression is, as it were, the funnel through which first the armies and then the enormous trade of the Mediterranean have poured themselves into western Europe, and from the first a great port had to exist at the entrance to this route. Hence Marseille was founded by the Phocians<sup>1</sup> about 600 B. C., and was the rival of Genoa and Venice in the Middle Ages. When the world's commerce shifted from the Mediterranean westwards, its growth was checked for a time, but the colonization of North Africa by the French and the opening of the Suez Canal restored its vitality. At the present day the tentacles of its shipping routes extend to all parts of the world, and draw to it ships of every nationality, bringing the raw produce of every zone and departing laden with the manufactured goods of France. Its commerce, as in the case of Naples, has brought about the growth of large manufactures, for both coal and raw material lie in abundance at its quays. A large head of water-power has been achieved by tapping artificially the swift current of the Rhone. As it receives great quantities of oil, home-grown and imported from the whole Mediterranean and also of tropical and temperate grains, soap and cereal food-stuffs are its chief manufactures.

Although Marseille had a fine large natural harbour, this has long since been supplemented and enlarged by artificial works, and new docks and quays have constantly to be added. For many years a canal joining Marseille with the Rhone has been under construction, and in 1916 the long tunnel, which was the most difficult part of the work, was finished.

*Côte d'Azur.* The French Riviera is continuous with the Italian, and has the same characteristics. The mountains behind the coast run from east to west, and so shelter it from

<sup>1</sup> Phocaea in Asia Minor.

the cold and unpleasant *mistral* (see p. 297). Hence the winter is mild and delightful. The vine, citrus, olive, early vegetables, and spring flowers grow luxuriantly, and market-gardening of vegetables and flowers, and the making of scents, soap, and olive-oil are the chief industries.

*Towns.* The population is concentrated in the towns, which flourish partly because of the tourist trade, and partly because of the industries above mentioned. Nice (pop. 184,000) and Cannes are among the large winter resorts.

## Corsica

*General Character.* Corsica is an island with an area of over 3,000 square miles, and might, if developed, become a very valuable asset to France. It is a fragment of an old land-mass now submerged, and is composed of hard crystalline rocks forming high ridges divided by secluded valleys. This old rock is subtended on the east by a marshy alluvial coastal plain of great fertility.

*Climate.* Its climate is delightful and productive, for while it has all the advantages of the Mediterranean type, it is saved from intense drought by the height of its mountains and the smallness of its area.

On the coastal plain citrus trees and almonds flourish, a little higher the olive-tree is the chief resource, and higher still are great forests of sweet chestnut.

In its present undeveloped state only one third of the island is cleared and cultivated, while quite half of it is covered with impenetrable and useless evergreen scrub and thicket (i. e. *maquis*).

*Towns.* The two centres of population are Ajaccio (pop. about 20,000) and Bastia, the former having its trade and intercourse with France, the latter with Italy. Foreign enterprise has partially developed the extraordinarily fertile land round these towns, but the Corsicans are a determinedly uncommercial and self-sufficing race, and set their faces against the intrusion of modern methods and ideas.

The Lowland of Aquitaine <sup>1</sup>

*General Character.* This region includes the basins of the rivers Charente, Garonne, and Adour. It is roughly triangular in shape, and has a long and very straight coast. The factors that make it a geographical unit are (1) its uniformly low elevation, (2) its warm, damp climate, (3) its economic development, which is almost entirely agricultural.

Although the whole country is very low, it is not flat. There are a large number of rivers running in a general westerly direction, and the rock being soft and easily eroded, these have cut deep and rather steep-sided valleys. Hence the surface is not flat like a table, but corrugated.

The ridges are only 600 or 700 feet high, but they are so numerous and rise so relatively steeply, that railways from south to north encounter endless difficulties. Hence Aquitaine is in a sense more cut off from the Paris basin than it is from the Rhone and the Mediterranean. One notices on a map how many railway lines follow the river-valleys eastward, and how few run toward Paris. Nevertheless the gap between the Armorican Peninsula and the Central Plateau, always known as the Gate of Poitou, is a very important opening, especially so for armies and road traffic, since roads are much less hindered than railways by a series of low ridges.

The river Charente, which runs through a limestone country, has clear abundant waters and a very regular flow. It is navigable as far up as Angoulême.

The Dordogne, Garonne, and Adour are all very irregular in their volume, and are not navigable. They have heavy spring and autumn floods which are dangerous and destructive.

*Climate.* The climate has none of the extremes or peculiarities of the Mediterranean region. Aquitaine is so far south as to be very hot in the summer, the winters are mild, and the

<sup>1</sup> In Roman days Aquitaine was a province, and because the province was a natural geographical unit, the name has survived.

westerly winds moderate the temperature at both seasons and bring an ample rainfall all the year round.

	TEMPERATURE (Degrees Fahr.)												Annual.
	Winter.			Spring.			Summer.			Autumn.			
	D.	J.	F.	M.	A.	M.	J.	J <sup>y</sup> .	A.	S.	O.	N.	
Bordeaux	41	40	43	47	53	58	65	68	68	64	55	47	54
RAINFALL (inches).													
Bordeaux	2.96	2.84	2.32	2.56	2.68	2.96	3.24	2.04	2.20	2.64	3.76	3.72	33.92

*Sub-regions.* Although the lowland is a very uniform region, there is a certain amount of difference in the economic development of its different parts, due chiefly to variety of soils, and five sub-regions should be noticed, (1) the Basin of the Charente, (2) the Basin of the Garonne, (3) the Landes, (4) the Plateau of Lannemezan, (5) the foothills of the Pyrenees (see Fig. 69).

(1) *The Basin of the Charente* is a limestone country of low plateaus and hills interspersed with sheltered and fertile valleys. Wheat and orchards share the valley lands with the vine, and a dense and prosperous population lives in pretty little limestone villages along the streams. This is one of the chief champagne-producing regions of France. As to the uplands, those of Quercy are half-barren *causses* (see p. 288) used only for sheep pasture, while Périgord is forested with oaks and sweet chestnuts. The oak-forests support great herds of pigs and yield valuable timber. The population is, of course, very scanty.

*Towns.* The towns of this limestone district stand on the rivers and are small market centres of twenty to thirty thousand people, e.g. Angoulême, Périgueux. They are comparable in size and importance to English market towns such as Taunton or Banbury, and have local manufactures of things like farm-machinery, paper, &c. On the coast there is a certain amount of fishing, centred in the old Protestant stronghold of La Rochelle. Built on a limestone promontory, and isolated by marshes, this town has had a characteristically individual



history, and was a suitable retreat for a band of religious refugees.

(2) *The Basin of the Garonne* is in many ways very different

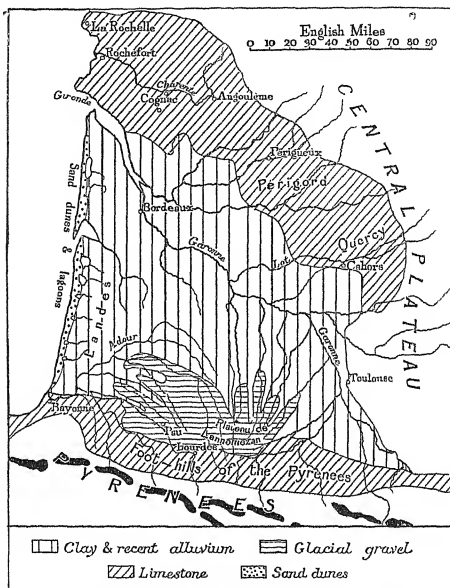


Fig. 69. Diagram of the rock-formation of the Basin of Aquitaine.

from that of the Charente, for the simple reason that here the porous limestone is replaced by soft, clayey alluvium which is impervious to water. Hence the whole country is richer as to soil and water-supply, but pays for this in being very marshy.

All along the river-valleys the vine is the chief resource, because here one can get the well-drained terraces suitable to its cultivation. Elsewhere maize, tobacco, and orchards cover the country.

*Towns.* The people live in large scattered farms, and because the floods isolate the homesteads in the winter, each family is accustomed to making all it needs. Hence villages are few. Such larger settlements as do exist are built away from the dangerous water-courses, perched on islands of higher ground, and on the slopes of hills (cf. p. 299, and also the English fens). Thus Toulouse (pop. 180,000), the great market centre of the whole region, a bridge-town, and a gap-town commanding the passage-way through to the Mediterranean (see p. 299), is situated far up the Garonne valley, where the slope up from the river is steep and hence relatively dry. In spite of this the town has more than once been devastated by floods.

The port of Bordeaux (pop. 256,000) is the only really important outlet of Aquitaine. It stands in the midst of the richest wine district, and at one time bid fair to become one of the great ports of the world. But during the nineteenth century it became evident that in the present epoch of the world's development purely agricultural regions like Aquitaine could not compete in wealth with industrial ones. Bordeaux remains a market and a great trading port, and has a large industrial population engaged in the manufacture of food-stuffs such as flour, chocolate, dried fruit, refined sugar, and also of such articles as are needed in the wine trade—corks, bottles, casks, &c.

(3) *The Landes.* Aquitaine, on the whole so fertile a country, has two definitely poor and infertile regions, namely the Landes, and the Plateau of Lannemezan.

The Landes<sup>1</sup> region is a narrow strip of country bordering the coast from Bayonne to the Gironde estuary. It is a very curious district, for while the subsoil is unconsolidated sand,

<sup>1</sup> *Lande* = heath, waste-land.

porous and unstable, on the actual surface is a thin coating of very hard sand, stuck together by gummy vegetable substances. It is as if the sand-dunes were varnished, and in consequence the water does not sink through, but stands in shallow lagoons in the wet season. In summer these become slimy and malodorous marshes. Those parts which are without the impermeable coating are, or were, equally uninhabitable, because the sands constantly shifted and buried attempts at cultivation. This whole region used to be practically bare of population, but of late years it has been skilfully and laboriously reclaimed. The lagoons were drained by the digging of deep trenches, and the dunes were fixed by the planting of extensive pine forests. Small industries such as cement-making and saw-milling were started, and the drained lands were turned into good pastures for cattle. The population is increasing rapidly.

(4) *The Plateau of Lannemezan*, at the foot of the Pyrenees, has a soil composed of glacial gravels, brought down by glaciers long ago. This soil is so poor and dry that not much will grow on it, except along the many streams where there are meadows and maize-fields.

(5) *The Foothills of the Pyrenees*. The Pyrenees themselves have already been dealt with as regards scenery and routes (p. 140), but a few words should be said about the contrast between their lower slopes on the French side and on the Spanish side. The dry semi-barren Spanish slopes are of little economic or human importance. The French side is abundantly watered, and river erosion is so violent that large tracts of alluvial soil cover the foot-hills and adjacent plains. These are rich with fields of maize, vineyards, and water-meadows, and dotted with clumps of tall poplars. The vivid blue skies, the soft air, and the smiling landscape, backed by the snow-clad peaks of the Pyrenees, have brought many visitors and holiday-makers to this part of the country, a further attraction being numbers of famous mineral and medicinal springs. Hence arose the towns of Pau, Lourdes, &c.

## The Paris Basin

*Introduction.* This is the largest, the most complex, and the most important of the regions of France. It occupies one quarter of the total area of the country. Its relief, though not high, is very varied, so that it has the disadvantages neither of a flat monotonous plain, nor of an inaccessible upland. Its climate is equable and well suited to all forms of agriculture, its soils so varied that in it a suitable place can be found for every type of temperate natural product. Finally, its very symmetrical river-systems provide a series of natural routes converging on Paris and so on the Channel coast, thus giving facilities for export and import trade.

*General Character.* The Paris Basin, which includes the basin of the Seine and Somme, and a portion of the Middle Loire (see Fig. 62, p. 282), is a bowl-shaped depression, rimmed on the east and south by a series of escarpments, and bounded on the west by the old uplands of Armorica, and on the north by what is now the English Channel, but has at various geological epochs been a strip of lowland joining England to France.

The French escarpments were formed in exactly the same way as the English Cotswolds and Berkshire Downs, by the partial wearing away of slightly tilted rock-strata (Fig. 73). The action of rivers made gaps in these escarpments, similar to the Reading gap in the Berkshire Downs, or the Dorking and Guildford gaps in the North Downs, and through these gaps natural routes converged on Paris (see Fig. 72), just as the above-mentioned English gaps are followed by roads converging on London.

The central part of the Paris Basin, known as the *Île de France*, is an 'island' of young or Tertiary rock, surrounded on all sides by stretches of chalk upland. This tertiary mass was once a continuous plateau of sands and limestones, but it has been so much cut up by water action that it is now a lowland broken by many ridges of slight elevation.

*Rivers.* The region is drained by three large rivers, the Somme, the Seine, and part of the Loire.

The Somme flows over a chalk country, and thanks to the absorbent nature of its basin, and the very regular and evenly distributed rainfall which feeds it, has an unusually constant volume. It is therefore very navigable as regards depth and current, but its mouth is so choked with mud that it does not form an outlet for trade. Much traffic goes up stream, and there is a canal connecting the Somme with the Oise.

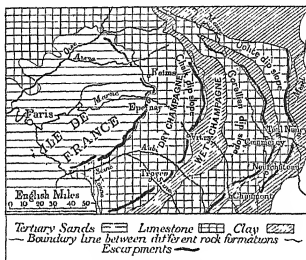


Fig. 70. Structure and arrangement of the French scarplands. Cf. Fig. 73.

The Seine is a complex river-system, the main stream being fed by many large tributaries, of which the Oise, Aisne, Marne, and Yonne are the chief. These, as has been said, converge so symmetrically on Paris, that they have, as it were, created the great town by the trade facilities which they bring it. Generally speaking the Seine has a very regular volume. The Yonne is its most dangerous tributary, for it rises in the Morvan, an outlying bit of the Central Plateau, where the heavy rainfall runs off the surface of the impervious old rock and causes sudden floods. When circumstances combine to cause the Seine to flood, serious damage occurs, especially in and near Paris; but this is largely because floods are so rare that the towns have not been built to resist them. Deforesta-

tion of the uplands has caused these inundations to be more frequent and serious in recent years.

Most of the Seine streams are navigable for the greater part of their course, and are of the utmost importance to trade.

The Loire gets nearly all its water from the impervious and stormy uplands of the Central Plateau. Hence it is subject to destructive floods, separated by periods where it is a mere trickle of water. Although nominally navigable up to Orleans,

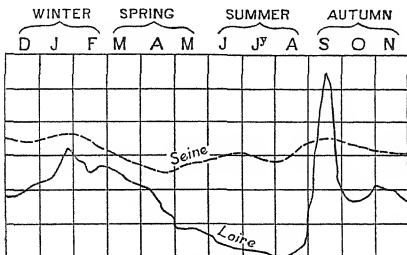


Fig. 71. Diagram showing the volume of the Seine and Loire. Compare the even flow of the Seine, with the spring and autumn floods and summer low water of the Loire.

the river carries so small an annual tonnage that it is negligible as a commercial waterway.

*Climate.* The climate is on the whole temperate and not unlike that of southern England. The rainfall is sufficient, and so evenly distributed throughout the year that agriculture gets the maximum benefit from it (cf. Italy, p. 168). The annual fall varies from 24 in. in the country round Paris to 40 in. and upwards in the higher eastern parts. The whole coastal belt is typically oceanic in its climate, and too cool for vine-growing (see Fig. 4, p. 9). East of Paris the summers are much hotter and sunnier, and here the vine flourishes—for although the winters are colder than on the coast, it can with-

stand winter cold provided it gets sufficient summer and autumn heat and sun.

°	TEMPERATURE (Fahr. Degrees).												Annual.
	Winter.			Spring.			Summer.			Autumn.			
	D.	J.	F.	M.	A.	M.	J.	J.	A.	S.	O.	N.	
Paris	37	36	38	43	50	56	62	65	64	58	50	42	50
	RAINFALL (inches).												
Paris	1.84	1.44	1.32	1.53	1.72	1.80	2.16	2.08	2.16	2.00	2.44	1.80	22.28

*Economic Development.* Such a climate, in conjunction with a great variety of soils, has made the Paris Basin remarkable for the number and excellence of its agricultural products. It has all the crops of south-eastern England, as well as several which England, being colder in summer, lacks (e.g. vine, maize, delicate fruits).

As regards manufactures this region is, of course, not so well-endowed as the coal-fields of the north-east (p. 319) and the Central Plateau (p. 285). But it is easy to supply Paris with cheap water-borne coal from England and from the north; and as much raw material is at hand, the Paris district has many manufactures.

*Routes.* The basin is so ringed in by uplands that the passages or *Sewils*<sup>1</sup> leading out of it are of peculiar importance, not only from the French point of view, but also for the whole of western Europe. The main routes and gaps are as follows (see Fig. 72):

(1) The chief outlet to the north is along the western edge of the Ardennes. The route follows the valley of the Oise northwards, and then gets across a slight upland to the Sambre tributary of the Meuse, which it follows down past the fortresses of Namur and Liège, and so out on to the coastal plain of north-west Europe (see p. 4).

Toward the east the great trade and war route is up the Marne valley and through the escarpments by a series of famous gaps, Epernay, Vitry-le-François, Bar-le-Duc, and the

<sup>1</sup> Thresholds.

border fortresses of Toul and Nancy. Beyond Nancy the line picks up a small river valley,<sup>1</sup> which leads through the Rhine highlands into the rift at Strasbourg (p. 230).

(3) Toward the Mediterranean the main route from Paris follows up the Seine and the Yonne, and gets across the Côte d'Or by the help of a small valley and, in the case of the railway, by a long tunnel, to Dijon (see also p. 294).

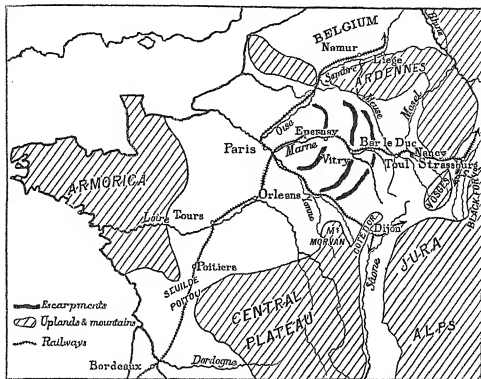


Fig. 72. The chief routes of northern France.

(4) Toward Aquitaine there is a broad gateway between the old uplands of Armorica and the Central Plateau, known as the *Seuil de Poitou*. Poitiers, famous in history, guards this gateway, which connects Paris and Bordeaux by a direct line.

*Sub-regions.* So varied a region as the Paris Basin might with advantage be divided into a large number of sub-regions, but it will be sufficient here to distinguish between (a) the Scarplands, (b) the *Île de France*, (c) the Coastal Plateau.

<sup>1</sup> The Saverne Gap.





Fig. 73. Diagram of the English and French Scarplands, on the same horizontal scale. (Note. Horizontal scale approximately correct. Vertical scale imaginary.)

(a) *The Scarplands* consist of alternating belts of limestone (or chalk<sup>1</sup>) and clay extending in a crescent from Armorica round to the Ardennes.

The eastern part has four well-defined escarpments, but west of the Morvan these become broken hills and then fade away.

*Comparison between the French and English Scarplands.* In order to get a clear idea of these French scarplands, one should compare them in detail with the English ones which lie back to back with them, separated only by the narrow and recently made English Channel (see Fig. 73).

The four French escarpments (see Fig. 70) are:

(1) *The Côtes de Moselle*, an oolite ridge corresponding to the English Cotswolds, and overlooking the valleys of the Saône and Moselle just as the Cotswolds overlook the Severn-Avon valley. The Côte d'Or (see p. 293) is part of this escarpment. Metz and Nancy (p. 236) lie to the Côtes de Moselle in the same relation as Gloucester and Tewkesbury do to the Cotswolds.

(2) *The Côtes de Meuse*. This is a high and well-marked escarpment of Corallian<sup>2</sup> limestone. In England this formation is a soft crumbling rag-stone,

<sup>1</sup> Which is, of course, just a special variant of limestone.

<sup>2</sup> i. e. Formed of the débris of old coral reefs.

and makes only the row of little hills round about Oxford,<sup>1</sup> from whose best quarries the Oxford Colleges got their stone. In France the same rock is much harder, and so the Côtes de Meuse are a well-marked feature.

(3) *The Chalk Escarpment* corresponds to the Chilterns and Marlborough Downs. At its foot extends a clay plain, 'Wet Champagne', corresponding to the Vale of the White Horse and the valleys of Thame and Aylesbury. Its dip-slope is a broad chalk plateau known as 'Dry Champagne', because of its dusty waterless soil. Troyes is in the gap made by the Seine, just as Reading is in the Thames Gap.

(4) *The Tertiary Escarpment* is the steep face of the Île de France, the 'island' of Tertiary limestones and sands of which Paris is the centre (p. 316). Reims, Epernay, and Montereau command the gaps in the barrier. The Île de France corresponds with the Tertiary London Basin, but in England there is no Tertiary escarpment, the chalk dip-slope of the Chilterns merging almost imperceptibly into the London sands and clays.

It should be noticed that the Seine tributaries have made gaps at short intervals in all the French escarpments, and hence, although the latter have an average height several hundred feet greater than the English ones, they are even easier to get through.

*Economic Development of the Clay and Limestone Belts.* As may be seen from Fig. 73, three of the four escarpments have at their base a narrow clay plain, and it is this alternation of clay plains and limestone plateaus that gives to these scarp-lands their characteristic geography.

Thus, the limestone dip-slopes of oolite, corallian, and chalk are, owing to the permeable rock, very dry and devoid of brooks and springs. They are given over to sheep, to a poor type of agriculture, and to large forests. Their sun-facing slopes are covered with vines, and quarrying the limestone is an important industry.

<sup>1</sup> Boar's Hill, Headington, &c.

The chalk plateau has an even more marked individuality than those of the limestone. As has been said, it is called 'Dry Champagne', and is a dusty, barren, and sparsely-peopled expanse. Its chief town, Reims (pop. 115,000), is celebrated for its woollen industry, its champagne, and its beautiful buildings, as might be expected in a country of sheep, vineyards, and quarries. Its size and its strong fortifications are due to its position in an important gap of the Tertiary escarpment.

Along the foot of each of the escarpments, where the springs issue from under the limestone, are rows of pretty stone-built villages which have grown into market towns and fortresses when standing at the gaps: e.g. Epernay, Montereau, Commercy, Chaumont, Toul.

The clay plains between the limestone are in strong contrast. Wet Champagne may be taken as typical. Here, side by side with waterless Dry Champagne, is a district covered with brooks and ponds. The land is of moderate fertility, very heavy to plough, making good wet pasture for cattle, heavily forested in parts with rather inferior timber. As in all well-watered regions, the population is widely scattered in little hamlets and groups of a few farms. The better houses are of locally made brick, the others of a mixture of mud and stones (in England called 'daub') or of wood.

Towns are few, and lie in two lines on the confines where the clay meets the limestone, where they make convenient centres for exchange between the contrasting regions.

West of the Morvan the scarplands are much less regular in their band-like arrangement, for here the clay and limestone have been overlaid with deposits brought down by the torrential affluents of the Loire (e.g. the Cher, Creuse). As a result some parts, e.g. Sologne, have a surface so impermeable as to be marshy and covered with ponds and lagoons.

But in the actual valleys of the Loire and its tributaries, conditions are very different. The rich alluvial soil and the mild climate make strips of extraordinary fertility, where cereals, market-gardens, nursery-gardens, and vineyards

flourish. Here the population is extremely dense, and every bit of soil is utilized.

If the Loire were navigable (p. 309), the whole countryside would develop greatly. As it is, three good-sized towns stand on the river, Orleans (pop. 70,000), Tours (pop. 77,000) and Angers<sup>1</sup> (pop. 86,000). All three are bridge-towns, hence route-centres, and hence large markets.

(a) *The Île de France*. The Tertiary 'island' consists of a broad low plateau called Beauce, south-west of the Seine, another plateau, Brie, between the Seine and the Somme, and a region of low ridges and valleys north of the Somme.

Beauce is a very level tract, about 500 feet high, of limestone covered with a clayey deposit which French geologists call *limon*. This *limon* is a characteristic covering on masses of chalk or limestone, and where it exists the surface soil is very fertile and not too dry. The whole tract is devoted to corn-growing, and after the harvest great flocks of sheep are turned on to the stubble to feed and to fertilize the soil. Where not under cultivation Beauce is forested; and on an outcrop of sandstone by the Seine above Paris is the famous royal forest of Fontainebleau.

The *limon* is too thin a deposit to yield water for human use, and so the population is concentrated in large villages where water is obtained from wells of 300 feet or so in depth. There are no large towns in Beauce, only medium-sized market centres like Chartres (pop. about 20,000).

Brie, like Beauce, is a low plateau, but its soil is much heavier and more clayey. It has, therefore, plenty of surface water. It is a rich farming country, but the corn of former days is being replaced by sugar-beet, which is dealt with on the spot in numerous local sugar-refineries. The plateau is cut by several deep winding river-valleys, and in these stand the market towns, but the population as a whole is scattered

<sup>1</sup> Angers is not actually on the Loire, but on a tributary close to the main stream.

in hamlets and isolated farms, owing to the abundant water-supply (contrast with Beauce).

North of the Marne the Tertiary mass is so dissected as to have become a region of valleys and ridges, very well watered and used for the cultivation of corn, sugar-beet, and vegetables. Being in easy communication with the northern coal-fields, the district has many small manufactures, such as glass-making wherever there are outcrops of sand, metal-working, sugar-refining.

*Paris and its surroundings.* Paris stands on the lowest part of the Île de France, where the Seine has been fed and enlarged by all its great tributaries except the Oise, but before it enters the deeply-incised chalk valley which leads to the sea. The country outside the town has a very broken relief of low hills and little valleys. There is much sandy soil on which grow forests, and much fertile ground where the city's fresh vegetables are grown. Large quarries of good building-stone are numerous. The population is very dense, there being twenty-four good-sized towns close enough to be suburban to Paris. In these towns are many of the manufactures which always collect round a great world centre.

Paris itself, with its population of nearly three millions,<sup>1</sup> owes its greatness partly to its natural advantages, and partly to the policy of its rulers in days gone by. To-day its natural advantages are not so overwhelming as they were in more primitive times. Where transport was difficult and siege and warfare constant, the fact that close about grew corn and wine and abundant wood was vital. The low heights all round it were easily fortified, there was plenty of building-stone, and abundant good drinking-water. Add to this the fact that it was both the geometrical centre and also the natural route-centre for the most fertile region of France, and one cannot wonder that the early kings set themselves to develop its possibilities. By degrees it has become for all France the

<sup>1</sup> London population 1917: (a) Registration London, 4,026,901; (b) Greater London, 6,726,753.

chief centre of government and public works, of art and learning, of trade and industry, and the largest consumer of French agricultural produce. Everything in France flows into Paris and flows out from it.

The industrial importance of Paris is apt to be overlooked, because, like London, it manufactures not one type of thing but many. It would be hard to mention a small article of luxury or of everyday human use that is not manufactured in Paris, and the sum of its countless small industries mounts up to large figures both as regards industrial population and production of wealth.

(c) *The Coastal Plateau.* Between the Île de France and the sea stretches a wide, low plateau of chalk, the province of Artois, Picardy, and Lower Normandy. This differs from the dusty and infertile chalk plateau of Dry Champagne in three ways:

(1) It is an undulating country, cut by deep and wide river-valleys whose floors are fertile and marshy.

(2) The chalk is covered with a thin layer of *limon* (see p. 315) which makes a fertile soil.

(3) The atmospheric moisture and heavy rainfall of a maritime region mitigate the dryness of the chalk.

Hence, while the chalk plateau of Champagne is barren and thinly peopled, that of the coast is a rich and populous agricultural region, devoted to the cultivation of corn and sugar-beet. Lower Normandy and Bray<sup>1</sup> have stretches of clay noted for rich pasture, where milch-cows and very fine horses are kept. Hence the famous Normandy butter and cheeses, and the Percheron horses, large handsome dray-horses bred on the slopes of *Le Perche* in Normandy. The whole region is just outside the vine-growing climate, and cider from the apple orchards replaces wine as the local drink.

*Distribution of Settlement.* On the plateau the population is concentrated round the deep wells, as always in a chalk

<sup>1</sup> Bray is a denuded upfold like the English Weald, with chalk escarpments enclosing a moist clay lowland.

country. Water for animals is got from dew-ponds, i.e. hollows in the chalk coated with clay or cement, where surface-water collects. The houses are built of brick or daub, or of chalk lumps wherever the chalk is hard enough.

In the marshy valleys, especially that of the Somme, intensive market-gardening is carried on, while on the swifter rivers numerous small industries utilize the water-power. Along these valleys population is dense, settlement being often continuous for miles. Although water is abundant, the villages are very much huddled, for the valley-sides are too steep and the floors too wet (and also too valuable) to be used for building. The accompanying cross-section shows how the villages stand just where the valley slope is gentlest (Fig. 74).

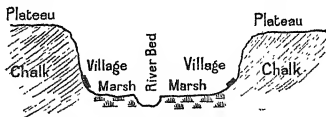


Fig. 74. Diagrammatic cross-section of a river valley in Picardy.  
(Adapted from Fèvre and Hauser, *Régions et Pays de France*.)

**Towns.** The actual sea-coast does not play an important part in the life, partly because it has few good harbours, and partly because the interior is too rich and attractive. As most of the sea front is steep cliffs, often subtended by muddy flats, the ports occur where a river-mouth makes an entry possible.

Le Havre (pop. 158,000), at the mouth of the Seine, is the second port of France, but its trade is only half that of Marseilles. Its chief import trade is in Brazilian coffee, American cotton, and various raw materials from South America.

Rouen (pop. 122,000) is the lowest bridge-town on the Seine, which makes it an important route centre; and it is a very large and noteworthy river port, importing especially raw materials for the manufacture of cotton and linen. These industries account for its big population.

Dieppe, Boulogne, and Calais are important chiefly for their connexion with cross-Channel traffic.

The inland towns of the chalk plateau are nearly all small but prosperous markets. Amiens (pop. 91,000) is where the route from Paris and the North Sea gets across the Somme. It has become a big town because its nearness to the northern coal-fields has enabled it to have a large industry in cotton-velvet.

*The Franco-Belgian Coal-Field* has been discussed elsewhere (p. 268). It has, of course, had a great influence on the life and town development of Artois. The two types of manufacture which it has developed, iron and textiles, are the same as those in northern English coal-fields, and due to similar reasons. Long before steam was used, Artois wove home-grown flax and wool, the latter largely supplemented by English wool. The tapestry of Arras and the lace of Valenciennes were famous in bygone days. When steam came, the population was already accustomed to weaving, and the industry grew by leaps and bounds. As in England, cotton was introduced and in some parts ousted wool. Iron-ore found near the coal soon made iron-smelting important, and the frontier was a natural place for large manufactures of military implements to grow up.

The double line of big industrial towns on either side of the political boundary has been spoken of (p. 269). The chief French port for the area is Dunquerque.

At the present day the chief towns and their manufactures are as follows:

<i>Town.</i>	<i>Population.</i>	<i>Manufactures.</i>
Lille	201,000	Cotton and iron.
Roubaix	117,000	Cloth, velvet.
Tourcoing	81,000	Cotton, wool, linen.
Valenciennes	,	Cambrie and cotton and coarse cheap lace.
Cambrai	28-35 thousand	Cambrie, linen thread.
Arras		Lace, hosiery.
Armentières		Linen.



## The Armorican Peninsula

*General Character.* On an ordinary relief map there seems no obvious reason why Brittany and the Cotentin peninsula should form a geographical region separate from the Paris Basin, for its hills are so low that it has not on a small map the appearance of an upland. But a geological map shows at a glance that an irregular line drawn from Caen to the Ile de Ré cuts off a mass of old granite and schists from the younger limestones and sands of the Paris Basin.

Armorica<sup>1</sup> belongs to the same type of region as Cornwall and the Central Plateau, and was at one time at least three or four thousand feet in height. Vast ages of erosion and weathering wore it down to an undulating lowland, and it was not upheaved again as was the Central Plateau.

The old rocks of which the peninsulas are made are of varying degrees of hardness, and lie in parallel bands stretching east and west. The granite and old sandstones are very resistant, and form two low broken plateaus, one along the north and one along the south. Although the highest ridges into which the plateaus are dissected are under 1,500 feet, the scenery of these higher parts of Brittany is often very imposing, with deep valleys and abrupt scarped ridges. Between the uplands is a lowland of schist, a softer rock yielding a deeper and better soil (see Fig. 74).

The coast is high and rugged, broken by the ria estuaries (p. 144) of many little rivers. In their upper courses these streams are picturesque rather than useful, but their mouths are navigable for some distance because of the high Channel tides which run up them. The Loire mouth is, of course, different. It is so blocked up by the masses of shifting sand brought down by its many tributaries, that a canal has had to be cut to enable vessels to get even up to Nantes.

<sup>1</sup> Armorica was the old Roman name for the north-western peninsulas of France. (From Celtic words *ar* = on and *mor* = sea.)

*Climate.* The climate is of a pronounced maritime type: The summers are cool and cloudy, and the winters in most parts, but especially along the coast, very mild. The rainfall is abundant, and the impervious soil and relatively slow evaporation make the lowlands very damp. Since granitic soil is heavy and clayey, the roads of Armorica are bad, and ploughing is such expensive work that most of the land is permanent grass.

*Occupations.* The climate is too cool for the vine, and not sunny enough for extensive fruit culture except cider-apples. It is particularly favourable for (a) rich pasture, (b) early vegetables, and so dairy-farming and market-gardening are, with fishing, the chief resources of the country.

Manufactures are relatively few and small, because neither coal nor raw material is plentiful. The pooriness of much of the land has, however, led the people to make the most of their resources, and so a good many local manufactures exist. Thus iodine, soda, rope, and leather are made.

Three economic sub-regions of Armorica should be noted: (1) The eastern belt, (2) the coastal belt, (3) the interior lowland.

(1) *The Eastern Belt* differs somewhat from the peninsula part, but far more from the Paris Basin on the other side. The transition from the sunny, bright, thirsty, and treeless landscape of the scarplands to the sombre densely-forested granite hills and the profusion of streams is marked. The relief is broken, and though low gives the effect of mountains. There is much barren heath, much forest, a good deal of poor agriculture, potatoes, rye, and buckwheat, and in fertile pockets barley, hemp, and flax, are grown. Since a livelihood is hard to make, there are many small industries arising from local raw material. Thus tanning and shoe-making are in places quite important, and coarse fabrics are woven from home-grown flax and hemp. Cider-apples being plentiful, cider-making is one of the chief resources.

(2) *The Coastal Belt* is the richest and most densely peopled.

The tidal inlets make communications easier than in the interior, and there are many sheltered bays for fishing-ports and coasting-trade. Granitic soil always suffers from want of lime, and along the coast this want is supplied by manure of seaweed and a kind of mud that contains many shells. Hence in sheltered spots very productive agriculture and market-gardening can be carried on. This is combined with a large fishing-industry, both inshore and deep-sea, and all these resources, supplemented by a good deal of tourist-trade, support a dense and prosperous population. Here, as everywhere in Armorica, the water-supply is copious and settlement is scattered, not concentrated. The houses are built of granite, and the general effect is sombre but picturesque.

(3) *The Interior Lowland* is a relatively poor region, partly because it is so isolated. Communications in winter are difficult owing to the bad roads, and railways are few. There are two fertile basins, separated by a slightly higher and very barren region called the Plateau de Rohan. The basin of Rennes is a pocket of rich agricultural land, surrounded by barren moors. Here fruit-trees, sugar-beet, and cereals flourish, and there are rich dairy-farms. The town of Rennes (pop. 80,000) is accordingly very much larger than the other inland towns of Brittany. Its size is increased by the fact that the two chief railways of Brittany cross here.

*Towns and Routes.* The lines of hills running from east to west make communications north and south very difficult. A railway line runs generally parallel to the coast, touching or sending branches to successive points along it, but the only good route across the peninsula is the one from St. Malo by Rennes to Nantes. As a result all the inland towns except Rennes are small local markets. But all round the coast are a series of towns, ranging from fishing-ports of 10,000 people, to great centres like Nantes (184,000) and Brest (67,000).

The smaller towns, such as St. Malo, Quimper, Douarnenez, would all be far more important if they had a satisfactory hinterland. They are too remote from the great trade routes

to draw trade from France in general, and Armorica itself is not rich enough to support many large harbours.

Cherbourg, Brest, and Lorient are important military ports and naval stations, and at present owe their size simply to this and, in the case of Cherbourg, to passenger-steamer traffic.

Nantes is the outlet of the Loire Basin, and so is not economically speaking a Breton town. It owes much of its

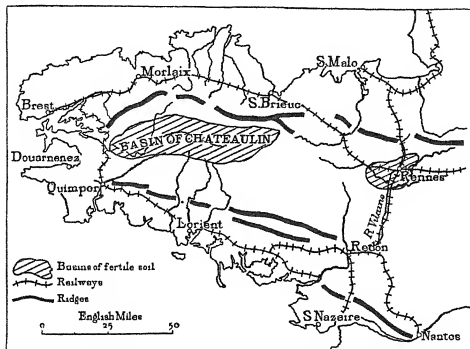


Fig. 75. Railways and coastal towns of Brittany.

wealth to manufactures, for, like many other great ports in non-industrial regions,<sup>1</sup> it has taken advantage of cheap water-borne coal and imported raw materials to set up factories for such things as sugar-refining and food-stuffs. As has been said, it can be reached from the sea only by a canal, the Loire itself being blocked by sand-bars. This canal has prevented St. Nazaire from becoming a large port.

<sup>1</sup> Marseille, Naples

## APPENDIX

### POLITICAL DIVISIONS AND PEOPLES

BY O. J. R. HOWARTH

France extends from the English Channel to the Mediterranean Sea, and from the Bay of Biscay to the middle Rhine. French is the common language everywhere, except that along the middle Rhine, in Alsace, some German is spoken (for this territory was German from 1871 to 1918), and along the eastern part of the French Mediterranean coast some Italian. Also, in the north-west, there are descendants of an old people, called the Bretons, driven many generations ago to this most distant promontory of France—that is, Brittany. Again, in the south-west, and extending also into northern Spain, there lives a people called the Basques. And both Breton and Basque preserve their ancient languages.

The kingdom of Belgium, small as it is, contains two peoples—the Walloons in the south, adjoining France, and speaking a kind of French, and the Flemings in the north, who speak a language almost exactly like the Dutch of Holland, which is itself not unlike German. The division between peoples and languages allied to French and to German thus passes through Belgium, and Belgium, as a political division, has, as a whole, no natural frontier. Germany is a collection of a large number of states, mostly small and situated in the Central European highlands, together with the large state of Prussia, whose territory is mostly in the northern plain. The broken country of hills and valleys in south Germany is (if you think of it) a region where small separate states would naturally be formed where communications, in earlier times at least, were not very easy, and where one valley or another, protected by hills and forests, might become the centre of an independent kingdom or duchy. In the west is the duchy of Luxemburg,

which remains independent. But Prussia, in the northern plain, has easy communications in all directions, and rich ports on a long coast-line ; so it became the most powerful German state, and the king of Prussia became the German emperor over the smaller states of the highlands, until at the end of the great war the empire, reduced in extent, became a republic.

The two northern peninsulas, Scandinavia and Jutland, are inhabited by the three Scandinavian peoples : the Danes, in Jutland and the adjacent islands, which form Denmark ; the Norwegians along the steep western slopes of the Scandinavian peninsulas toward the North Sea ; and the Swedes on its longer eastern slope towards the Baltic. These three peoples are closely related : they speak different forms of the same language ; and it might be expected that they would form one state, and so they have, for a time, in their past history. But the Danes, principally farmers, in their lowland peninsula, are separated by the straits at the entrance to the Baltic Sea (Skagerrak, Cattegat, and the Sound) from their relations in the Scandinavian peninsula. Moreover the Norwegians, fishermen and overseas traders, driven naturally to a seafaring life by their position on a well-sheltered coast with many deep inlets, are separated by the barren highland which is the backbone of the peninsula from the Swedes on the other side of it, who are rather farmers, miners, and manufacturers. Norwegians and Swedes were long united under one king, but their territories, and therefore their conditions of life and interests, are so far different that they have separated.

Just as Prussia, with its plain territory and easy communications, made itself the most powerful German state, so in the vast eastern plain of Europe (and beyond it in the northern plain of Asia) one great state established itself—Russia. Here are no natural boundaries strong enough to establish independence within them, so long as there was a strong central government able to control the whole plain. But when Russia was broken by revolution, several of the peoples who were within the Russian empire formed new and smaller states, or

have tried to do so. Four such states border the Baltic Sea, each holding a section of the east coast, a port or two, and a stretch of territory behind them. These peoples and states, from north to south, are the Finns of Finland, the Ests of Esthonia, the Letts of Latvia, and the Lithuanians of Lithuania. West of Lithuania there is, bordering the Baltic, a detached strip of territory belonging to Germany (East Prussia). To the south, between this and the Carpathians, and comprising most of the basin of the great river Vistula, is Poland, the land of the Poles, whose territory touches the Baltic along a short line west of the Vistula mouth, but has as yet no port. At the Vistula mouth itself is Danzig, the natural port of Poland. But this was a German port when Poland, down to the close of the great war, was not independent as it is now, but was divided between Germany and Russia. Now Danzig, inhabited by both Germans and Poles, has been taken from Germany but has not been given to Poland, and remains a free city.

The Poles are bordered on the east by one of the Russian peoples, called White Russians, a backward folk, because they live in an infertile country, marshy, with practically no mineral wealth. To the south of them are the Ukrainians or Little Russians of the Ukraine or 'border' land between the rest of Russia and the lands to the south-west. These people, possessing a richer territory and so more advanced, may form a state bordering Poland and Rumania on the one hand and Russia on the other, containing part of the rich grain-growing 'black earth' region which has Odessa as a port on the Black Sea, and also coal-fields and forest lands. The Little Russians extend westward into Rumania and Poland along the foot of the Carpathian Mountains, where they are known as Ruthenians, and have not become independent. The principal division of the Russian peoples in Russia itself is called the Great Russian: there are others; but the country is too unsettled to let it be said whether any of them are likely to succeed in setting up independent states. Between the

Caucasus and the Arctic Sea there are no districts which natural divisions help to mark off lands for separate states, as there are in western Europe.

The empire of Austria-Hungary as it existed down to the end of the great war included a number of different peoples who have now formed states. Chekho-Slovakia (or Czecho-Slovakia) covers Bohemia, where, as will be seen from a contoured map, it has natural hill-frontiers on three sides, and extends eastward and southward along the southern slopes of the western Carpathians, and along a reach of the left bank of the Danube. The position of this state is therefore important as it lies across main lines of communication between central and northern Europe and the middle Danubian plain. The Chekhs (Czechs) and Slovaks who have formed this state are kindred peoples, but the Chekhs of the west (Bohemia, &c.) are active in manufacturing industries, having a land rich in minerals as well as fertile soils, while the Slovaks in the east are almost wholly an agricultural folk.

In the Alps, as in the central European highlands, we find small states. It is true that both France and Italy hold Alpine territory, and Germany a little, but in the middle Alps is the small independent republic of Switzerland; and in the eastern Alps that of Austria. The people of the Swiss republic are different—of French, German, or Italian relationship—in different parts: the Austrians are German. Their territory, for the most part, is isolated among the mountains, but it extends north-eastward into the Danube valley where the capital, Vienna, is situated, a city too large for the small state to which it now belongs, though as the capital of the former empire of Austria-Hungary it was one of the chief cities of Europe.

The plain of the middle Danube is inhabited in the west by the Magyars of Hungary, of whose territory Budapest on the Danube is the capital. In the eastern part the population is more mixed; there are many Rumanians, and Rumania possesses most of this part of the plain, the mountains of



Transylvania to the east of it, and eastward again, the Wallachian or Lower Danube plain, north of the river and bordered on the east by the Black Sea. There is in Transylvania a detached body of Magyars, called Szeklers, who come under Rumanian rule. The Drave, a tributary of the Danube, marks off the Magyars on the north from the South Slavs or Yugo-Slavs on the south, and the territory of Yugo-Slavia extends from the Drave to the Adriatic Sea. In the west it borders Italy and Austria; in the north-east, beyond the junction of the Drave with the Danube, it crosses the Danube, and includes the south-east part of the middle plain; in the east it includes the former kingdom of Serbia, which extends south nearly to the Aegean Sea, but has no port on that sea. The Bulgars inhabit the territory east of Serbia and south of the Danube and Rumania, bordering the Black Sea, but they also do not touch the Aegean coast. For the rest, the Balkan Peninsula belongs mostly to Greece, excepting a wild mountainous bit of territory between Greece and Yugo-Slavia, hitherto perhaps less known to the outside world than any other part of Europe, and inhabited by the descendants of a very old people, the Albanians (just as the Bretons remain in the remote peninsula of Brittany). Also, in the east of the peninsula, Turkey keeps a scrap of European territory surrounding its capital, Constantinople, which guards the entrance from the Mediterranean (Aegean) Sea to the Black Sea through the straits of the Dardanelles, the Sea of Marmora, and the Bosphorus.

A physical map of the Balkan peninsula shows that although it is crossed by certain well-marked routes (see 61), there is no natural centre with routes leading from it from which the whole peninsula could be governed; thus it has long been divided between different states, and these have often fought. The Greeks, in their southern part of the peninsula, mountainous, broken by inlets of the sea, and fringed by islands, are for that reason a seafaring people (just as the Norwegians are): as land communications throughout the peninsula are difficult,

the sea, or land routes along the coast, are used where possible, and so along the north coast of the Aegæan Sea we find a mixture of peoples. Greeks are numerous here, and this strip of coast is now Greek territory. In the same way, bordering the west coast of the peninsula, we find successively, from south to north, Greece, Albania, Yugo-Slavia, and Italy: in the towns along this coast of the Adriatic there are Italians as well as South Slavs, and Italy possesses the city of Zara, and the coast-line of Istria at the north-west of the Adriatic, including the ports of Pola and Trieste.

As to the other Mediterranean peninsulas, Italy is marked off for the Italians from the rest of Europe by the Alps, and the Iberian peninsula for the Spanish by the Pyrenees; but this peninsula is divided between Spanish and Portuguese—closely related peoples—as the Scandinavian is between Swedes and Norwegians.

Such are the main political divisions and peoples of Europe; if their relation to the natural regions of the continent be understood, it will be easier to understand the fuller descriptions of their countries, and their relations to each other.

## SUMMARY OF THE GEOGRAPHICAL CLAUSES OF THE TREATY OF VERSAILLES, MAY, 1919

### *Germany.*

1. To give Alsace-Lorraine to France.
2. To give Belgium a strip of disputed border territory.
3. To give up Polish territory to the new Poland.
4. To permit the establishment of the State of Chekho-Slovakia.
5. To allow the fate of certain areas in Schleswig-Holstein and East Prussia to be decided by plebiscite.
6. To allow France to have the Saar Valley Coal-field area for fifteen years. the district to be administered by an international commission. Its fate then to be decided by plebiscite.
7. To dismantle Heligoland fortress, and to open the Kiel Canal to all nations.
8. To allow an army of occupation on the left bank of the Rhine, especially at the bridge towns of Cologne, Coblenz, and Mainz, for fifteen years. Germany to pay for this army.

### *Austria.*

1. To give the Trentino and the lands round the head of the Adriatic to Italy.
2. To give up Bohemia, Moravia, Austrian Silesia, and the Slovak region north of Hungary, to form Chekho-Slovakia.
3. To give Croatia and other regions of South Hungary and part of South Austria to form with Serbia Yugo-Slavia.
4. To give Galicia to Poland.
5. To give Transylvania and the Bukowina to Rumania.
6. Navigation of the Lower Danube to be international.

### *Summary of the Balkan Settlement*

1. Bulgaria loses south coast to Greece, and small areas to Yugo-Slavia.
2. Turkey loses all European Territory to Greece except Constantinople and its immediate vicinity.

# EUROPE AND THE MEDITERRANEAN LANDS

## QUESTIONS

### I. INTRODUCTION

1. Discuss the truth of the statement that the World known before the fifteenth century was bounded by the Ice Stream of Labrador, the Trade Winds, and the Great Desert.
2. Explain the use of the various land forms of the Mediterranean and its coasts to men who were unable to navigate freely out of sight of land. [In what ways do these effect the history of Roman and Greek colonization?]
3. Enumerate the sparsely-peopled lands that to-day form political frontiers in Europe. What are the advantages of boundaries running through such regions?
4. 'River valleys form natural routes.' 'Plains permit of easy communication.' Discuss these statements in relation to the three routes across Europe described in this chapter.
5. Trace the northern limit in Europe of the beech and the oak respectively. Which crops would you associate with beech? Which with the oak?
6. Describe in detail the effect on the climate of the fact that Europe is a continent of peninsulas.

### II. EASTERN LOWLANDS OF EUROPE

1. Describe the climate of each of the Forest and Tundra Regions of Eastern Europe, with special reference to the rainfall and duration of frost in each region.
2. 'Europe has no deserts.' Which are the regions in Eastern Europe in which desert-like conditions are most nearly approached? Explain some of the causes which produce such areas.
3. Which areas in Eastern Europe have been enriched by transported soil? What is the difference in fertility between water-borne or wind-borne soil?

*Or,*

Describe the effect of glaciation on the Great Plain of Russia.

4. Draw diagrams to show the difference in monthly temperatures and rainfall between Moscow and Odessa. What is the difference in Annual Range between Kazan and Leningrad?

5. Suggest some of the effects of uniformity of relief in Russian transport. What are the chief difficulties of road and railway making? Discuss how far waterways, natural and artificial, are used for commerce.

6. What geographical reasons help to explain the slowness of the development of the natural wealth of Russia?

7. Discuss the economic changes that have taken place in life on the Steppeland of the Ukraine.

*Or,*

Contrast the pastoral and agricultural régime on the Steppeland of the Ukraine.

8. Describe the Western Steppe (Rumania), showing the controls affecting agriculture and distribution of population.

### III. SCANDINAVIA

1. On a map of Europe the Scandinavian peninsula looks a separate natural region. What causes have prevented it from ever being a satisfactory political unit?

2. What climatic conditions make it possible for barley to be a valuable crop well within the Arctic Circle in Norway? Explain the causes of such conditions.

3. In the Middle Ages Denmark and Norway were united, and in each farming was supplemented by fishing. In what ways have each of these main industries developed in each country?

4. Discuss the various means of transport used in the Scandinavian peninsula.

### IV. MEDITERRANEAN LANDS. *Eastern*

1. Compare the Eastern and Western Basins of the Mediterranean especially in respect of position and of coastal forms.

2. Discuss the characteristics of the climate known as 'Mediterranean'. Can you justify the conclusion that in each district of the three southern peninsulas such a climate would be found?

3. 'The Mediterranean, with help from the nomad lands, has favoured early development of civilization of a settled and, therefore, of an accumulative kind.' What geographical facts can you bring forward to substantiate this proposition?

4. Compare the political divisions of the Balkan peninsula in the years 1913 and 1921. Discuss the relationship of these units with the Natural Regions as depicted in Fig. 13.

5. 'The Balkan peninsula is a region of disunited highlands and of small states.' Write a short essay on this subject.

6. Compare the positions of Bulgaria, Yugo-Slavia, and Greece as regards the possibilities of trade with other countries.

7. Describe the scenery of the Karst lands and of the Dobruja. To what causes would you attribute their salient characteristics?

8. Examine the statement that the Balkan peninsula is a land of 'mountain shepherds, valley farmers, and merchantmen on the sea'.

9. Why does Greece so largely supply the world's demand for currants?

10. Draw a map to illustrate the importance of the site of Constantinople. What are the geographical reasons for placing the Bosphorus under the guardianship of the League of Nations?

11. Explain the importance of the Vardar-Struma route and the value of the position of Salonica.

12. Draw a map which will show

(a) the connexion of the trend of the Anatolian ridges with those east and west of it;

(b) the Railway from Berlin to Bagdad and the important gaps and gates through which it passes.

13. Herodotus said of the people living in the western half of the Central Plateau of Asia Minor that they were 'richest in sheep, richest in crops of all the peoples that we know'. Discuss the geographic controls of this plateau and explain the present scarcity of population.

14. Draw graphs to compare the Temperature and Rainfall of Trebizond, Adana, Harput. Describe the climate of each.

15. Compare the position and natural wealth of Crete and of Cyprus to-day and in bygone centuries. What is meant by the 'changing values' of controls?

16. 'Syria is the crossing-place of routes which makes it a better link between the Asiatic countries and the Mediterranean lands than the edges of the Anatolian plateau.' Discuss the above statement and state the possible value to India of a railway between Alexandria and Basra.

17. The Nomad Israelites settled in Palestine. Compare the geographical conditions under which they lived before and after this event.

18. Describe the economic resources and outlets of Galilee, The Ghor, and The Hauran.

19. Taking the Nile as an example, write a short essay on the value and influence of water in human affairs.

20. Explain exactly the position of the North-east Trade wind belt, its variations with the seasons and, as far as may be, its causation. In this connexion describe the desert type of climate, using all the statistics at your command.

21. Discuss the importance of the Suez Canal as a waterway and show the nature of the traffic that passes through it.

V. MEDITERRANEAN LANDS. *Western*

1. What physical difficulties have the French to fight against in developing Algeria? Explain the conditions under which their chief crops grow.

2. Is the lack of large inland towns a sign of incomplete development? Refer in your answer to the Atlas Region especially.

3. Associate the structural features of the Atlas Region with those of Spain, making a map to show the relationship.

4. 'The Iberian peninsula is a world by itself—a world of contrasts.' Comment on this statement.

5. Give some account of the natural wealth of Spain. Explain the advantages it possessed when it was a great Power. Why with its wealth, area, and population has there been so much recent emigration?

6. Compare an orographical map of Iberia, the map of Density of Population, and a map of the Provinces. What geographical facts make it difficult for Spain to be a political unit?

7. Compare the sites of Madrid and of Lisbon as capitals of countries. Discuss the distribution in Iberia of towns with over 100,000 inhabitants.

8. Compare the climate of Sicily with that of the Northern Plain of Italy, making full use of the information given in the Tables on p. 160 and p. 178.

9. Of Italy it has been said 'that the North is in many ways a modern progressive community; the South is still in the Middle Ages'. Can you suggest in what ways geographical conditions have helped to make the contrast?

10. Draw a map to show the main routes by which Rome is approached by road and rail. Enumerate the geographical advantages which favoured the centralization of a great empire in this city.

11. Mark in a map of Italy the areas where the following crops are of the greatest importance—wheat, maize, vine, olive. Describe the climatic and soil conditions necessary for each crop.

12. 'The Alpine slopes in Italy are of old rock and young relief.' 'Peninsula Italy is "young" in two senses.' Explain fully what is meant by the above statements. What are the consequences on the land forms, and on the soils?

13. Taking the Po River as an example, write a short account of the work done by rivers in erosion and deposition, explaining the resulting alterations in the actual river bed.

14. What are the chief routes from the Plain of Lombardy to the countries west and north of it? Which Italian towns have been affected by the development of such routes?

15. During recent years Italy has made rapid advances in the iron

and steel industries. Discuss the sources of power and of raw material.

16. Trieste and Fiume have achieved great notoriety of late. Explain the reasons why the various nations considered them to be of such importance.

## VI. MOUNTAINOUS CENTRAL EUROPE

1. Discuss the effects of ice in shaping the valley forms of Switzerland.

2. Draw a diagram showing the connexion between the Pyrenees, Alps, Carpathians, and Balkans. Explain the various trend lines of the ridges and compare the Alpine and Balkan systems as obstacles to routes.

3. Describe a 'mountain climate', using the tables given. What is the political and economic influence of a mountain environment?

4. Discuss the situation and characteristics of the Lakes of Switzerland and their effect, if any, on the climate and cultivation of the districts bordering them.

5. Write an account of the agricultural and transport possibilities of the Middle Danube Plain.

6. Explain the present difficulties of Austria in supporting the large city of Vienna.

7. What are the necessary conditions for the successful cultivation of maize? In which countries of Europe is it an important crop?

## VII. CENTRAL EUROPE. NORTH OF THE MOUNTAIN BELT

1. What geographical factors must be considered by the Chekhoslovakians in striving to make their country an economic unit?

2. Compare the Rhine rift valley with the Rift Valley of Scotland as regards structure and importance in giving means of communication.

3. Locate the chief coalfields in Germany. Explain the use of these regions previous to their industrial development, and show why the Industrial Revolution caused no such great changes in the areas of denser population in Germany as in England.

4. Discuss the advantages possessed by the North German Plain for the early settlement of mankind.

5. Draw a map showing the main waterways of the Central European Plain. Explain the similarity of the trend of the river valleys of the Weser, Elbe, Oder, Vistula.

6. Explain the economic advantage to France of the recently acquired lands of Lorraine.

7. Discuss the nodality of the sites of Hamburg, Frankfurt,



Leipzig, Prag, Cassel, Magdeburg. Compare the sites of Berlin and Berne as capitals of countries.

8. 'Denmark is an example of a thrifty nation, making good use of her natural advantages and overcoming many of her difficulties.' Give facts which will substantiate this statement.

9. Give the main exports and imports of Holland, explaining the value of her tropical possessions.

10. How far are the conditions of life in Holland typical of a temperate delta?

11. Divide Belgium into natural regions, giving the salient characteristic of each.

12. A river has normally three divisions, upper, lower, and middle courses. Apply this statement to the river valleys of the Rhine and the Volga.

### VIII. WESTERN LOWLAND

1. Describe the formation of deltas, referring especially to the delta of the Rhone.

2. Give a concise account of the physiographic and economic aspects of the Paris Basin, comparing it with South-east England.

3. Discuss the value to France of the Rhone-Saône corridor.

4. Divide France into climatic regions, explaining as far as you can the various differences and comparing them with those of England.

5. 'The areas in France devastated between 1914 and 1918 were those of the greatest value to her.' Can you justify this statement?

6. Explain the importance of the Somme, Verdun, and Belfort in the Great War.

7. Describe the areas where the vine can be cultivated in France. Explain the conditions necessary and the extent to which France satisfies the world's demand.

### GENERAL

1. Distinguish between a 'fiord' and a 'sea' coast. Draw a map to show where these various forms appear. Discuss the possible advantages of each for modern commerce.

2. Wild wheat is said to have been found in Palestine. Describe the climate of its natural habitat and those of the various regions of Europe in which the cultivated varieties have been acclimatized. In which of the natural regions of Europe is there the best yield per acre?

3. In what areas of Europe and the Mediterranean Lands are there valuable oil-fields? Discuss the probable importance of their sites in the future.

4. Draw a map to show which are the main butter- and cheese-making areas in Europe ; compare it carefully with the map of the natural vegetation of Europe and write your conclusions.

5. Give an account of the distribution of water-power in Western Europe, referring especially to those areas where much advantage has been taken of it.

6. Discuss the various forms of irrigation in use in Eastern Mediterranean Lands, the need for it, and the crops grown by its aid.

7. The Germans considered the areas governed before 1914 by the 'Central Powers' capable of becoming a well-organized economic unit. Discuss the geographical factors which would aid towards making it self-contained.

8. One of the aims of the Allied and Associated powers in the Great War was the liberation of small nations under alien rule. Give some instances in which this has been accomplished under the Peace Treaty. Choose one or more of the new States and discuss the possibilities of the nation making the State into a satisfactory economic unit.

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